



ANNUAL STATISTICS
2022



Imprint

Publisher Max Planck Institute for extraterrestrial Physics

Editor and Layout: T. Herrmann, B. Niebisch



Klimaneutral
Drucken
ClimatePartner.com/11444-2009-1006



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B. Spiegel, manager at the Klaus Tschira Stiftung gGmbH, Heidelberg

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MDirig Dr. M. Wolter, Bavarian Ministry of Economic Affairs, Regional Development and Energy, Munich

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Prof. Dr. J. Peacock, Universität Edinburgh (UK)

Scientific Honours, Appointments

Förster Schreiber, N. M.: ERC Advanced Grant, 2021 competition, European Research Council, Brussels, Belgium, 04/2022.

Eisenhauer, F.: Foreign Associate to the Académie des Sciences, Académie des Sciences Paris, Paris, France, 06/2022.

van Dishoeck, E. F.: Fritz Zwicky Award, European Astronomical Society, Valencia, Spain, 06/2022.

Eisenhauer, F.: Michelson Investigator Achievement Award 2020 for the groundbreaking results of VLTI-GRAVITY, Lowell Observatory and Observatoire de la Côte d'Azur, Montreal, Canada, 07/2022.

Eisenhauer, F.: Jackson-Gwilt Medal of the Royal Astronomical Society for the development of astronomical instrumentation, Royal Astronomical Society, Warwick, United Kingdom, 07/2022.

Correa, C.M.: Carlos Varsavsky Prize - Best PhD Thesis in Astronomy of Argentina, Asociación Argentina de Astronomía, Buenos Aires, Argentina, 08/2022.

Eisenhauer, F.: Gruber Cosmology Prize for designing instruments that collected evidence for a black hole at the center of our galaxy, Gruber Foundation, Busan, Korea, 08/2022.

Eisenhauer, F.: Stern-Gerlach Medal of the German Physical Society for the pioneering work in high-resolution infrared astronomy, DPG, Regensburg, Germany, 09/2022.

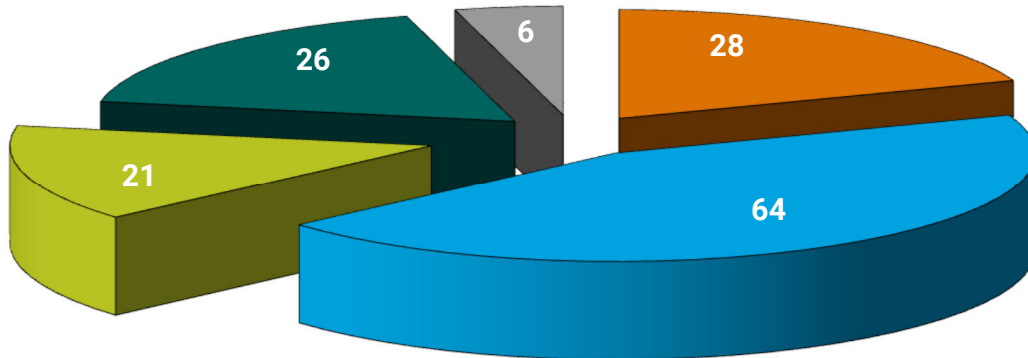
Grassi, T.: Astrophysical Software Award, German Astronomical Society (AG), Bremen, Germany, 09/2022.

van Dishoeck, E. F.: Niels Bohr International Gold Medal, Copenhagen, Denmark, 10/2022.

Shimizu, T.: Reinhard Genzel Nobel Prize Fellowship, Munich, Germany, 12/2022.

Science Groups

Staff Members by Science Group



■ Infrared

■ HE-Astrophysics

■ CAS

■ OPINAS

■ Research Groups

Infrared and Submillimeter Astronomy

Secretary: Richter, A.

Team Assistants: Dengler, S.; Hagedorn, I. (until 30.09.); Kleiser, A.; Simonis, E. (since 01.12.); Zanker-Smith, J.

Biondi, Dr. F.; Bourdarot, Dr. G.; Cao, Dr. Y.; Coogan, Dr. R. (until 28.02.); Dallilar, Dr. Y. (until 15.09.); Davies, Dr. R.; Eisenhauer, Dr. F.; Feuchtgruber, Dipl.-Phys. H.; Förster Schreiber, Dr. N.; Gillessen, Dr. S.; Jolly, Dr. J.-B. (since 01.04.); Kravchenko, Dr. K.; Liu, Dr. D.; Lutz, Dr. D.; More, N.; Ott, Dr. T.; Price, Dr. S. (until 31.07.); Pulsoni, Dr. C. (since 01.06.); Rabien, Dr. S.; Shangguan, Dr. J.; Shimizu, Dr. T.; Sturm, Dr. E.; Tacconi, Dr. L.; Widmann, Dr. F.; Yazici, S.

Guests

Grani, Dr. P. (11.-18.02.); Bisbas, Dr. T. (21.-25.03.); Kuhn, L. (22.05.-19.08.); Nestor, A. (03.07.-29.07.); Herrera Camus, Dr. R. (20.07.-19.08.); Harris, Prof. A. (04.7.-08.07.); Cuadra, Dr. J. (4.-15.07., 22.-28.07.); Wuyts, Dr. S. (18.-22.07.); Zhang, J. (18.-22.07.); Netzer, Prof. H. (18.-30.07.); Foschi, A. (16.-20.08.); Wölfer, L. (22.-28.09.), Leemker, Dr. M. (22.-28.09.); Wada, Prof. K. (27.09.-04.10.); Contursi, Dr. A. (until 25.02.); van Dishoeck, Prof. E.; Finger, Dr. Gert; Amaro Seoane, Dr. Pau; Sternberg, Prof. A.; Tamburo, P.; de Zeeuw, Prof. T.

PhD (D.) / Master (M.)

Barféty, C. (since 01.09., D., Förster Schreiber); Bettoni, G. (until 31.12., D., van Dishoeck); Bordoni, M.S. (since

01.09., D., Genzel/ Gillessen); Drescher, A. (D., Eisenhauer); Lee, L. Y.-L., (D., Tacconi, Förster-Schreiber); Mang, F. (M., D. since 01.12., Eisenhauer); Pastras, S. (since 01.09., D., Genzel/Förster Schreiber); Ribeiro, D. (since 01.09., D., Genzel/Gillessen); Santos, D. (D., Shimizu)

High-Energy Astrophysics

Secretary: Boller, B.

Team Assistant: Frankenhuizen, W.

Altmann, A.; Andritschke, Dr. R.; Antonelli, V.; Arcodia, R. (until 31.12.); Becker, Dr. W.; Behrens, Dr. A.; Beitler, C.; Boller, Prof. Dr. Th.; Bonholzer, M. (until 31.12.); Brunner, Dr. H.; Buchner, Dr. J.; Bulbul, Dr. E.; Burgess, Dr. M.J.; Burkert, Dr. W.; Burwitz, Dr. V.; Chitham, I. J. (until 30.06.); Comparat, Dr. J.; Dennerl, Dr. K.; Eder, Dipl.-Ing. J.; Emberger, V.; Frank, J.; Freyberg, Dr. M.; Friedrich, Dr. P.; Friedrich, Dr. S.; Gaida, R.; Gatuzz, Dr. E. (since 01.09.); Ghirardini, Dr. V.; Gueguen, Dr. A.; Greiner, Dr. J.; Haberl, Dr. F.; Hartner, Dipl. Math. G.; Haase, Dr. J.; Hauser, G.; Keil, Dr. I.; Kienlin von, Dr. A.; Liu, Dr. A.; Laas, Dr. J.; Liu, Dr. T.; Liu, Dr. Z.; Locatelli, N.; Maitra, Dr. Ch.; Malyali, A.; Meidinger, Dr. N.; Mayr, A.; Merloni, Dr. A.; Müller, T.; Müller-Seidlitz, Dr. J.; Ni, Dr. Q. (since 08.10.); Oser, J. (until 31.03.); Osterhage, Dr. S.; Pfeffermann, Dipl.-Phys. E. (until 30.9.); Pietschner, D.; Predehl, Dr. P.; Ramos Ceja, Dr. M.; Rau, Dr. A.; Reiffers, Dr. J.; Rukdee, Dr. S.; Salvato, Dr. M.; Sanders, Dr. J.; Schmidt, T.; Schweingruber, A.; Siegert, T. (since 01.11.); Stieglitz, V.; Stanke, Dr. Th. (since 01.08.); Stewart, Dr. I.; Thi, Dr. W.-F.; Trümper, Prof. Dr. J.; Zhang, Dr. X. (since 1.9.)

Guests

Acharya, N. (25.03.-30.09.); Acero, Dr. F. (17.-19.10.); Anastasopoulou, Dr. K. (25.-29.07.); Baldini, P. (25.09.-24.12.); Burke, C. (18.-20.9.); Collmar, Dr. W.; Diehl, Dr. R.; Georgakagis, Dr. A. (04.-27.07.); Grünwald, G. (12.-14.01.); Hemmanth, M. (04.-09.07.); Munos Rodriguez, I. (16.04.-30.06.); Musiimenta, B. (16.10.-01.11.); Nicastrò, Dr. L. (15.04.-30.06.); Pfeffermann, E.; Pietsch, W.; Sala, Dr. G. (07.-13.08.); Scheck, D.; Strong, Dr. A.; Schnetler, Dr., H. (12.-15.12.); Schröder Dr. A.; Tohuvavohu, Dr. A. (04.-08.07.); Tomlinson, T. (11.07.-12.09.); Webb, Dr. T. (01.04.-30.06.); Zhang, Dr. H. (21.07.-27.07.)

PhD (D.) / Master (M.)

Aydar, C. (since 01.09., D., Merloni); Bacelj, A. (since 01.10., D., Greiner); Bahar, E. (D., Bulbul); Biltzinger, B. (D., Greiner); Bock, K. (since 01.12., M. Greiner); Bogensberger, D. (until 30.06., D., Nandra); Camilloni, F. (D., Becker); Fresco, A. (D., Merloni); Gauger, I. (since 01.09., D., Buchner); Grotova, I. (since 25.07., D., A. Rau); Hecker, Y. (M., Greiner); Hecker, C. (since 01.05., M. Greiner); Kaltenberger, D. (D., Haberl); Khrokriakova, A. (since 25.07., D., Becker); Igo, Z. (D., Merloni); Kuhn, M. (M., Greiner); Lopez, N. (until 30.09., M., Buchner); Mayer, M. (D., Becker); Roster, W. (since 01.10., D., Salvato); Scheck, D. (until 30.09., M., Sanders); Schmidt, L. (M., Greiner); Shreeram, S., (D., Bulbul); Seppi, R. (D., Comparat); Schösser, E. (until 31.11., M., Greiner); Waddell, S. (D., Nandra, Boller); Willer, R. (D., Greiner); Wolf, J. (D., Salvato); Yeung, H.F., (D., Becker); Zhang, Y., (D. Ponti); Zheng, X. (D. Ponti)

Optical and Interpretative Astronomy

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PhD (D.) / Master (M.)

Balzer, F. (D., Saglia); Bolze, R. (M., Bender); Blumhof, M. (M., Bender); Clarke (until 31.07., D., Gerhard); DeNicola, S. (until 30.11., D., Saglia); Esposito, M. (D., Saglia); Fiorilli, A. (since 01.09., D., Saglia) Finkbeiner, L. (M., Fabricius); Gong, L. (D., Bender); Ding, H. (M., Fabricius); Koc, A. (M., Saglia); Krecker, K. (until 30.04., D., Fabricius); Lipka, M. (D., Saglia); Luis, T. (D., Saglia); Merghan, K. (D., Bender); Neureither B. (D., Thomas); Pandey, A. (D., Gerhard); Seminaite, A. (D., Sanchez); Smolla, M. (D., Bender); Steuer, J. (D., Grupp); Thikonenko, I. (D., Saglia); Wessely, P. (M., Fabricius); Wylie, S. (until 31.07., D., Gerhard)

Guests

Ruiz, Dr. A. (01.07.-30.09.); Hill, Prof. Dr. G. (01.08.-30.09.)

Center for Astrochemical Studies

Secretary: Langer, A.

Almeida Ribeiro, Dr. F. (since 01.09.); Araki, Dr. M. (since 01.04.); Bunn, Dr. H. (since 11.07.); de Oliveira Alves, Dr. F. (until 30.11.); Endres, Dr. Ch.; Giuliano, Dr. B.M.; Gong, Dr. M.; Hsieh, Dr. T.-H.; Ivlev, Dr. A.; Jensen, Dr. S.; Jiménez Redondo, Dr. M.; Jusko, Dr. P.; Küffmeier, Dr. M.; Lattanzi, Dr. V.; Lin, Dr. Y.; Maureira Pinochet, Dr. M.J.; Nolan, Dr. Ch. (until 31.05.); Pineda Fornerod, Dr. J.; Redaelli, Dr. E.; Schmiedeke Dr. A. (until 10.04.); Silsbee, Dr. K. (until 20.11.); Sipilä, Dr. O.; Spezzano, Dr. S.

Guests

Akimkin, Dr. V. (since 07.12.); Billard, B. (28.02.-28.06.); Cherouvrier, D. (21.03.-03.04, 16.05.-27.05.); Collmar, Dr. W. (since 01.01.); Das, Dr. A. (since 01.12.); Dohnal, P. (27.06.-10.10.); Eschen, Y., (04.07.-31.12.); Ferreira, T. (16.06.-04.07.); Gärtner, L. (since 01.01.-31.12.); Gehmen, T. (16.08.-28.10.); Gupta, T. (01.01.-31.05., 01.07.-31.12.); Harju, Dr. J. (01.02.-30.04.); Hsieh, Ch.-H. (21.11.-03.12.); Rab, Dr. Ch. (since 06.08.); Santos, P. (16.06.-04.07.); Silsbee, Dr. K. (12.12.-31.12.); Taniguchi, K. (09.01.-18.03.); Weber, M. (01.12.-31.12.)

PhD (D.) / Master (M.)

Alberton, D. (D., Caselli); Choudhury, S. (until 18.10., D., Caselli, Pineda Fornerod); Ferrada Chamorro, S., (since 04.08., D., Caselli); Ferrer Asensio, J., (D., Caselli, Spezzano); Giers, K. (D., Caselli, Spezzano); Kakkenpara Suresh, S. (since 20.05., D., Caselli); Kruczkiewicz, F. (until 31.12., D., Caselli); Müller, B. (until 31.03., D., Caselli, Giuliano); Obolentseva, M. (since 22.06., D., Caselli, Ivlev); Riedel, W. (D., Caselli, Redaelli); Tabatabaei Mazraeh No, F.S. (D., Caselli, Redaelli); Valdivia Mena, M. T. (D., Caselli, Pineda Fornerod); Zamponi Fuentealba, J. (D., Caselli, Maureira Pinochet)

Working GroupsWorking Group Gerhard

Gerhard, Dr. O.

PhD Student: Pandey, A.

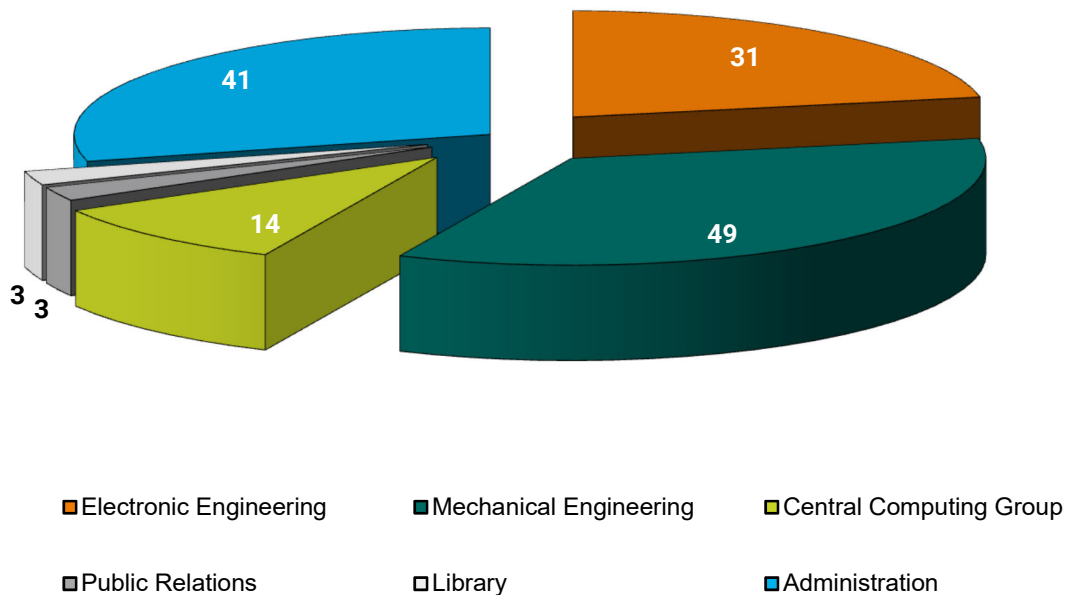
Working Group van Dishoeck

van Dishoeck, Prof. Dr. E.; Hu, Dr. C.-Y. (until 01.09.); Grant, Dr. S.

PhD Student: Bettoni, G.

Engineering and Workshop

Engineering, Workshops and Central Services Staff



Electronical Development

Albrecht, Dipl.-Ing. S. (Head)

Barl, Dipl.-Ing. (FH) L.; Bechteler, Dr. T.; Bornemann, Dipl.-Ing. (FH) W.; Burghardt, Dipl.-Ing. (FH) T.; Dickfeld, M.Sc. (FH) F. (since 01.08); Hälker, Dipl.-Ing. (FH) O.; Hans, O.; Hartmann, K.; Jilg, Dipl.-Ing. (FH) T. (since 15.11.); Jung, M.Sc. F.; Kink, Dipl.-Ing. (FH) W.; Kshirsagar, M.Sc. T.; Mandla, M.Sc. C.; Müller, Dipl.-Ing. (FH) S.; Neumeier, M.Sc. L.; Rau, M.Sc. C.; Reiffers, Dipl.-Ing. (FH) J.; Uysal, M.Sc. S.; Yaroshenko, V.; Zanker-Smith, J.; Ziegleder, Dipl.-Ing. (FH) J.

Electronical Workshop and Utilities Management

Oberauer, F. (Head)

Bachhuber, M.; Berger A.; Cibooglu, H.; Emslander, A. (until 09.09.); Greßmann, R.; Kreibich, I.; Langer, P.; Özdemir, H.; Rupprecht, T. (until 31.05.) Schneider R.

PhD (D.) / Master (M.)

none

Mechanical Engineering and Test Facilities

Schubert, Dr. J. (until 31.05.); Lang, Dipl.-Phys. F. (Head) (since 01.05.)

Antonelli, Dr.-Ing. V.; Beitler, M. Eng. C. (until 31.05.); Deysenroth, C.; Deysenroth, M.; Dittrich, Dipl.-Ing. (FH) K.; Emslander, B. Eng. A.; Geis, Dr. N.; Gemperlein, Dipl.-Phys. H. (until 30.06.); Hartl, Dr. M.; Haußmann, F.; Hörmann, M.Sc. V. (until 31.03.); Huber, Dipl.-Ing. H.; Mican, Dipl.-Ing. B.; Möller, M. Eng. J.-P.; Paßlack, Dipl.-Ing. (FH) S.; Pflüger, Dipl.-Ing. (FH) A.; Pietschner, Dipl.-Ing. (FH) D.; Rohe, C.; Sönmez, M. Sc. A. (since 01.07.); Strecker, R.; Frank, M.Sc. J. (since 15.10.); Senol Dipl.-Phy. Y. (since 01.07.)

Mechanical Workshop

Czempiel, S. (Head)

Bayer, R.; Bergner, K.; Brara, A.; Budau, B. (until 31.12.); Eibl, J.; Feldmeier, P.; Folek L.; Furchtsam, C.; Goldbrunner, A.; Hartwig, J.; Heckmair, S. (since 16.2.); Honsberg, M.; Huber, D.; Huber, F.-X. (until 31.07.); Kestler, H.-J.; Knapp, S.; Loichinger, L. (since 16.2.); Sandmair, R.; Schunn, W.; Schuppe, D.; Soller, F.; Waldhör, F.

Apprentices

Beck, A.; Fokken M. (since 01.09.); Furchtsam, S.; Heckmair, S. (until 15.02.); Lindenmüller, C.; Loichinger, L. (until 15.02.) Schaefer, T.; Stadler, B.; Stübing, M.; Weber, G. since 01.09.)

Student Assistants and Interns

Student Assistants

Möller, J.; Ovsiannikova, A.; Saxena, A.; Starck, H.; Tiwari, S.R.

Work Experience (University)

Rosin, E.; Shivakumar, J.; Spallek, L.; Tomlinson, T.J.

Work Experience (High School)

Brunn, L.; Centmeyer, M.; Du, H.; Eschen, Y.; Groß, J.; Harms, N.; Hoßfeld, T.; Maurus, J.; Schmied, A.; Scholz, M.; Schregle, T.; Vollmar, M.

Central Services

Central IT-Group

Bohnet, Dipl. Phys. A. (Head)

Agudo Berbel, A.; Baumgartner, H.; Grassi, Dr. T.; Kleiser, A.; Klose, L.; Kollmer, C.; Oberauer, A.; Ott, Dr. T.; Piemonte, A.; Elsner, C.; Snigula, Dr. J.; Wieprecht, Dipl.-Ing. E.; Wierzorrek, Dipl.-Ing. (FH) E.

Public Relations

Hämmerle, Dr. H.; (Head)

Herrmann, T.; Niebisch, B.

Library

Bartels, C. (Head)

Blank, E., Balicevic, M.

IMPRS

Hilbert, A.

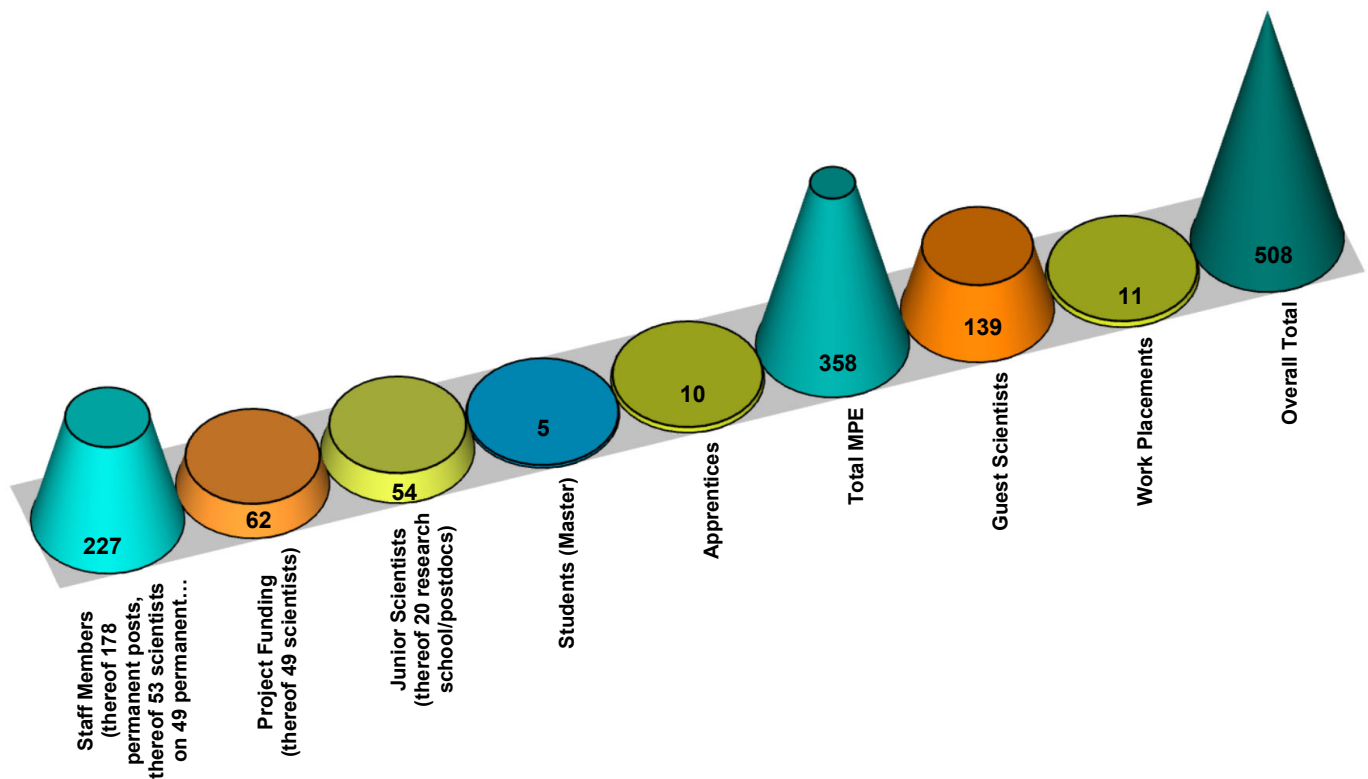
Administration

Fischhaber, P. (since 01.03.) (Head VAD); Wanger, H. (until 31.05.)

Secretary: Hesseler, G.

Arturo, A.; Ayari, S.; Bauer, T.; Cziasto, U.; Eder, A. (until 31.07.); Eicher, C.; Faust, T.; Gareva, L.; Goldbrunner, S.; Grohmann, M.; Hartung, I.; Hausmann, S.; Hidas, R.; Jäkel, T.; Jirsch, Y.; Kaps, S.; Keil, M.; Kestler, L.; Krapivina, A.; Kuhwald, E.; Maier, E.; Mandl, E.; Nagy, A.; Neun, A. (BR); Paschou, J.; Preisler, C.; Rosenberger, S.; Sacher, A.; Schmidt, A.; Schwaiger, S.; Seyfarth, B.; Stock, C.; Stöckl, D.; Stricker, C.; Studier, S.; Thiess, F.; Thiess, L.; Üblacker, K. (until 31.10.); Zubanova, E.

Personnel Statistics



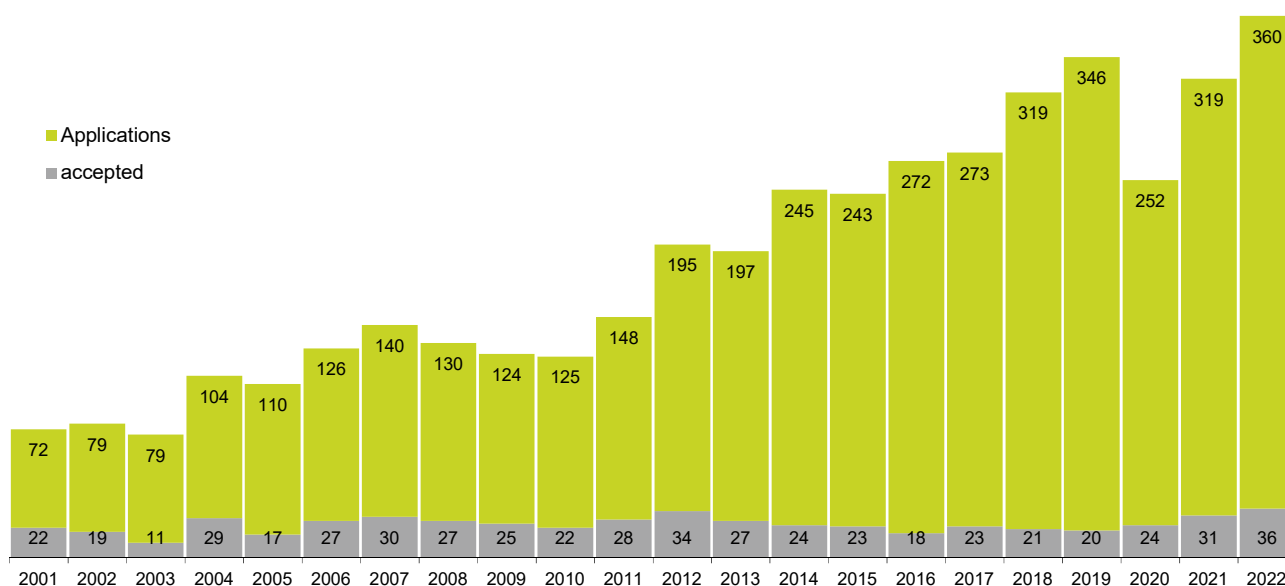
International Max Planck Research School (IMPRS) for Astrophysics

The IMPRS for Astrophysics is a graduate school at the Ludwig Maximilians University (LMU) Munich. The school is a joint project of the Max Planck Institutes MPE and MPA (Max Planck Institute for Astrophysics) as well as the Observatory of the LMU Munich and the European Southern Observatory ESO. In the academic year 2022, a total of 114 students took part in the program, thereof

47 at the MPE. 360 students from 42 countries applied for the year 2022. 36 students were accepted, thereof 14 at the MPE.

As a rule, several PhD students from local universities join the program during the year, so that on average 26 PhD students take part per year.

IMPRS Applications since 2001



Summary of annual applicants for the IMPRS Program in Garching. Since its start in 2001, a total of 4258 students applied until 2022, 538 were accepted.

Public Relations Work

In 2022, the MPE engaged in the following PR activities: 35 public talks (in part online) by MPE scientists, 19 press releases about scientific results and general news (scientific prizes, awards). After activities at the institute came to an almost complete standstill during the past two years due to the Covid19 pandemic, sporadic visits and events were possible again during the year. In total, MPE hosted six visiting groups in 2022, including a delegation from the president-elect of the Max Planck Society, Patrick Cramer.

Girls' Day 2022 was held online and consisted of several lectures as well as a livestream from the workshop. A total of 50 girls participated.

Activities on social media were also continued or intensified in 2022. The MPE's Twitter account (@MPE_Garching) had 1276 followers as of Dec. 31, 2022, and has posted a total of 623 tweets or re-tweets since it was activated in June 2021. The account on LinkedIn (MPE-Garching) had 3806 followers at the end of the year, more than doubling the number of followers within one year. Additionally, an account on Mastodon (@MPE_Garching) was created in December 2022.

More information about the PR work can be found at <http://www.mpe.mpg.de>

Project Groups

(Project Lead underlined)

Infrared and Submillimeter Astronomy

Deputy to the Director of the Group:

Lutz, Tacconi.

ERIS:

Dallilar, R. Davies, Dengler, M. Deysenroth, Eisenhauer, Feuchtgruber, Gemperlein, Hans, Hartl, Hartwig, D. Huber, Kleiser, Kravchenko, Pflüger, C. Rau, Sturm, Wiezorrek.

GRAVITY, GRAVITY+:

Bourdardot, de Zeeuw, Dengler, Drescher, Eisenhauer, Feuchtgruber, Genzel, Gillessen, Hartl, Haußmann, Lutz, Mang, More, T. Ott, Pflüger, C. Rau, Ribeiro, Sadun Bordoni, Santos, Schubert, Shangguan, Shimizu, Sturm, Tacconi, Uysal, Widmann, Wieprecht, Wiezorrek, Yazici, Zanker-Smith.

LBT Argos:

Barl, R.Davies, M. Deysenroth, Gemperlein, Rabien, Zanker-Smith, Ziegleder.

MICADO:

Barl, Biondi, Cao, R. Davies, Dengler, M. Deysenroth, J. Eder, Eisenhauer, A. Emslander, Förster Schreiber, Geis, Gemperlein, Genzel, Gillessen, Hartl, Haußmann, H. Huber, Jilg, Kleiser, Kravchenko, Lang, Neumeier, Pflüger, Rabien, Sönmez, Sturm, Ziegleder.

Galactic Center:

Bourdardot, Dallilar, Drescher, Eisenhauer, Genzel, Gillessen, Mang, T. Ott, Ribeiro, Sadun Bordoni, Widmann, de Zeeuw.

Galactic Nuclei:

Cao, R. Davies, Genzel, Lutz, Shangguan, Santos, Shimizu, Sturm, Tacconi, de Zeeuw.

Galaxies at High Redshift:

Barféty, Cao, Coogan, Förster Schreiber, Genzel, Jolly, L. Lee, D. Liu, Lutz, Pastras, Pulsoni, Price, Sturm, Tacconi.

Star Formation:

Bettoni, Grant, Hu, van Dishoeck.

High-Energy Astrophysics

ATHENA/Mirror:

Budau, Burwitz, Hartner, Langmeier, Müller, Passlack, Rukdee, Schmidt, .

ATHENA/WFI:

Albrecht, Andritschke, Antonelli, Bechteler, Behrens, Bonholzer, Bornemann, Eder, Emberger, Frank, Freyberg, Haberl, Hälker, Hartmann, Hauser, Kink, Lederhuber, Meidinger, Mican, Möller, Müller-Seidlitz, Nandra, Pietschner, A. Rau, Reiffers, Schubert, Strecker, v. Kienlin, Pflüger.

Chandra:

Burwitz, Predehl.

Einstein Probe/Detector:

Keil, Meidinger, Nandra.

Einstein Probe/Mirror:

Budau, Burwitz, Eder, Friedrich, Gaida, Hartmann, Hartner, Langmeier, Z. Liu, Müller, Passlack, Pfeffermann, Rohe, Rukdee, Schmidt, Schuppe, Stieglitz.

eROSITA:

Andritschke, Becker, Boller, Bornemann, , Brunner, Budau, Burghardt, Bulbul, Burwitz, Coutinho, Dennerl, Dittrich, Eder, Eibl, Emberger, Freyberg, P. Friedrich, S. Friedrich, Gaida, Goldbrunner, Gueguen, Haberl, Hälker, Hartmann, Hartner, F. Huber, Kink, Maitra, Meidinger, Merloni, Mican, S. Müller, Nandra, Ni, F. Oberauer, Pfeffermann, Pietschner, Predehl, Ramos-Ceja, Rau, Reiffers, Rohé, Salvato, Schuppe, Soller, Stewart, Trümper, v. Kienlin.

ROSAT:

Boller, Freyberg, Haberl, Trümper.

Swift:

Greiner.

XMM-Newton:

Boller, Dennerl, Freyberg, Haberl, Meidinger, Trümper.

Fermi:

Collmar, Diehl, Greiner, v. Kienlin.

GROND:

A. Rau.

INTEGRAL:

Diehl, Greiner, v. Kienlin.

MXT-SVOM:

Budau, Burwitz, Hartner, Langmaier, Müller, Passlack, Meidinger, Nandra, Rukdee, Schmidt, A. Rau.

eXTP:

Altmann, Bechteler, Meidinger, Nandra.

4MOST:

Comparat, Laas, Merloni, Salvato, Thi.

Active Galaxies:

Boller, Buchner, Collmar, Comparat, T. Liu, Merloni, Nandra, Ni, Salvato.

Clusters of Galaxies:

Artis, Buchner, Bulbul, Comparat, Garrell, Gatuazz, Ghirardini, Kluge, A. Liu, Locatelli, Ramos-Ceja, Sanders

eBOSS/SPIDERS:

Comparat, Merloni, Nandra, Salvato.

Optical and Interpretative Astronomy**Large Scale Structure, eBoss, HETDEX:**

Bender, Correa, Farrow, Fabricius, Hopp, Pezzotta, Sanchez.

EUCLID:

Bender, Bodendorf, Escartin, Fabricius, Garcia Carpio, Grupp, Kruk, Hartung, Raison, Saglia, Sanchez, Steinwagner, Wetzstein.

Galaxy Dynamics:

Bender, Gerhard, Parikh, Saglia, Thomas.

INODE:

Bender, Fabricius, Subramanian.

GRAVITY+:

Bender, Fabricius

KMOS:

Bender, Saglia.

MICADO:

Bender, Fabricius, Grupp, Saglia, Thomas.

Prime Focus Spectrograph:

Bender, Fabricius, Garcia Carpio, Sanchez.

Stellar Populations and Galaxy Formation:

Bender, Hopp, Parikh, Saglia.

Center for Astrochemical Studies**Observations:**

De Oliveira Alves, Hsieh, Jensen, Lin, Maureira Pinochet, Pineda Fornerod, Redaelli, Schmiedeke, Segura-Cox, Spezzano.

Theory:

Gong, Grassi, Ivlev, Küffmeier, Nolan, Rab, Silsbee, Sipilä.

Laboratory:

Dickfeld, Endres, Giuliano, Hans, Jiménez Redondo, Jusko, Kshirsagar, Lattanzi, Spezzano.

Teaching

Johann Wolfgang Goethe University (Frankfurt am Main, Germany)

Boller, Th.

Radiation and Matter. (SS 22).

Dynamik des Planetensystems. (SS 22).

AGN Physics. (WS 22/23).

Chalmers University of Technology (Gothenburg, Sweden)

Caselli, P.

Introduction to Astrochemistry. (online lecture May 2022)

Heidelberg University (Heidelberg, Germany)

Caselli, P.

Astrochemistry 101: from atoms to seeds of life. (Heidelberg Summer School).

Astrochemistry 101: Molecules as diagnostics of stars and planet formation. (Heidelberg Summer School).

University of Groningen (Groningen, The Netherlands)

Caselli, P.

From atoms to seeds of life: the astrochemical journey. (Blaauw Lecture).

Pontificia Universidad Católica de Chile (Santiago, Chile)

Caselli, P.

Dense Core Chemistry. (Astrochemistry Summer School).

Protostellar disk chemistry. (Astrochemical Summer School).

Planet formation and chemistry. (Astrochemistry Summer School).

TUM (Garching, Germany)

Eisenhauer, F.

High Angular Resolution Astronomy: Telescopes, Adaptive Optics, Interferometry, and more. (SS 22).

Introduction to Astrophysics. (WS 22/23).

Bad Honnef Physics School (Bad Honnef, Germany)

Gillessen, S.

The Black Hole in the Galactic Center. (WS 22/23).

Universidad Autónoma de Chile (Santiago, Chile)

Lattanzi, V.

Molecular Spectroscopy for Astrochemistry: Part 1 - Context and Theory. (November 2022).

Molecular Spectroscopy for Astrochemistry: Part 2 - From Theory to Lab to Space. (November 2022).

Universidad Andres Bello in Chile (Santiago, Chile)

Salvato, M.

The problem of identification and characterisation of X-ray sources in AGN evolutionary studies. (WS 22/23).

Observatorio Nacional Rio de Janeiro (Rio de Janeiro, Brazil)

Salvato, M.

eROSITA insights on the hot and energetic Universe. (Special Courses Cycle 2022,).

Organisation of Scientific Seminars / Conferences

Users Meeting of Cavity Spectroscopy. zoom, 15.12.2022, Organisation: M. Araki, K. Tsukiyama, T. Oyama, K. Suma.

Galaxy Clusters 2022: Challenging Our Cosmological Perspectives. Baltimore, 25-29 April 2022, Organisation: E. Bulbul, M. Donahue, Y.-T. Lin, T. Marriage, M. Montes, P. Natarajan, M. Ntampaka, M. Postman.

Multi-phase, Multi-temperature and Complex: how AGN feedback shapes the nature of the circum-galactic and halo gas in galaxy groups. Garching, December 6-9, 2022, Organisation: P. Popesso (chair), V. Mainieri, M. Brusa, C.

Peroux, A. Concas, E. Bulbul, A. Merloni, J. Comparat, D. Nelson, K. Dolag, P. Tozzi, S. Ettori, S. Borgani, P. Rosati, A. Liu, V. Ghirardini.

Friends of Friends Meeting. Córdoba / Argentina, 18.04. - 22.04.2022, Organisation: V. Bertazzi, R. Pignata, V. Cristiani, L. Ferrero, F. Stasyszyn, E. Díaz-Giménez, V. Daza, S. Gurovich, A. Rodríguez, D. Mast, C. Correa.

The Epoch of Galaxy Quenching. Cambridge, United Kingdom, 05.09. - 09.09.2022, Organisation: D. Sijacki, F. D'Eugenio, A. Bluck, M. Cappellari, A. Concas, E. Cur-

tis-Lake, S. Eales, S. Ellison, N. M. Förster Schreiber, J. Hlavacek-Larrondo, R. Maiolino, Y. Peng, A. Pillepich, J. Schaye, J. Scholtz.

Alvio@80 – Of Stars and Galaxies: Open Routes and Future Horizons Charted by a Curious Venetian Explorer. Chania, Crete, Greece, 09.09. - 10.09.2022, Organisation: M. Giavalisco, N. Arimoto, T. Brown, V. Charmandaris, A. Cimatti, E. Daddi, E. d'Onghia, N. M. Förster Schreiber, L. Hunt, T. Kodama, G. Magdis, C. Maraston, S. Mei, B. Poggianti, R. M. Rich, G. Rodighiero, J. Silverman, M. Zoccali.

In Situ View of Galaxy Formation 2. Ringberg, Germany, 25.07. - 29.07.2022, Organisation: N. M. Förster Schreiber, L. J. Tacconi, R. Genzel, D. Lutz, J. Bland-Hawthorn, R. Bouwens, F. Combes, T. de Zeeuw, T. Kodama, T. Naab, A. Renzini, A. Shapley, A. M. Swinbank, T. Treu.

Multi-phase, Multi-temperature and Complex: how AGN feedback shapes the nature of the circum-galactic and halo gas in galaxy groups. ESO, Garching, Germany, 7.12-9.12, Organisation: P. Popesso (chair), V. Mainieri, M. Brusa, C. Peroux, A. Concas, E. Bulbul, J. Comparat, D. Nelson, K. Dolag, P. Tozzi, S. Etori, S. Borgani, P. Rosati, A. Liu, V. Ghirardini.

European Planetary Science Congress 2022: Small bodies from the active Main Belt to the Oort cloud and beyond. Granada, Spain, 18.09. - 23.09.2022, Organisation: J.-B. Vincent, T. Müller, X. Shi.

The Dynamic & Chemical Connection. Leiden, 04.07. - 08.07.2022, Organisation: Ch. Rab, Ch. Ginski, C. Hall, T. Grassi, J. Ilee.

EAS2022 - Symposium S5: Towards the next generation of X-ray surveys with Athena. Valencia, Spain, 30/06 - 01/07/2022, Organisation: A. Comastri, S. Etori (co-Chair), M. Guainazzi (co-Chair), A. Hornschemeier, L. Lovisari (co-Chair), S. Martínez-Núñez, K. Nandra, L. Piro, E. Pointecouteau, A. Rau (Co-Chair), M. Salvato, T. Reiprich, M. Sasaki.

Observing the Universe in Motion: 5 Years of GRAVITY. Schloss Ringberg, Germany, 23.10. - 29.10.2022, Organisation: P. Caselli, V. Cardoso, F. Eisenhauer (co-chair), S. Hönig, L. Kreidberg, A. Lagrange, D. Lutz (co-chair), J. Monnier, G. Perrin, K. Perraut, T. Shimizu (co-chair), J. Woillez.

LyX Day (MPA). MPA, 05.10.2022, Organisation: E. Komatsu, F. Arrigoni Battaia, B. Ciardi, M. Gronke, M. Fabricius, C. Peroux, M. Walther.

OPINAS seminar (weekly seminar). MPE, 26.09.2022 - 12.12.2022, Organisation: A. Pezzotta, S. Kruk.

Multi-line Diagnostics of the Interstellar Medium. Nice, France, 04.04 - 06.04.2022, Organisation: C. Ceccarelli, J. Cernicharo, S. García-Burillo, M. Gérin, S. Guilloteau, F. Le Petit, R. Neri, N. Sakai, E. Schinnerer, K. Schuster, L. Tacconi, A. Weiss.

Galaxy evolution with the ESA Euclid mission and ESO telescopes. European Space Astronomy Centre (ESAC), Villanueva de la Cañada near Madrid, Spain, 24.10. - 27.10.2022, Organisation: J.-G. Cuby (co-chair)

, K. Kuijken (co-chair), C. Scarlata (co-chair), S. Toft (co-chair), B. Altieri, R. Bowler, J. Brinchmann, K. Caputi, J.-C. Cuillandre, C. Conselice, C. De Breuck, P. Ferruit, G. Guzzo, R. Ivison, L. Koopmans, R. Laureijs, V. Mainieri, R. Pello, L. Tacconi.

A Holistic View of Stellar Feedback and Galaxy Evolution. Ascona, Switzerland, 11.07. - 15.07.2022, Organisation: A. McLeod (chair), D. Kruijssen, M. Krumholz, L. Tacconi.

Ringberg Colloquium in Honor of Reinhard Genzel's 70th Birthday. Schloss Ringberg, Germany, 26.06 - 02.07.2022, Organisation: L. Tacconi, F. Eisenhauer, N. Förster Schreiber, D. Lutz, E. Sturm.

In Situ View of Galaxy Formation 2. Schloss Ringberg, Germany, 24.07. - 29.07.2022, Organisation: N. M. Förster Schreiber (co-chair), L. J. Tacconi (co-chair), R. Genzel, D. Lutz, J. Bland-Hawthorn, R. Bouwens, F. Combes, T. de Zeeuw, T. Kodama, T. Naab, A. Renzini, A. Shapley, M. Swinbank, T. Treu.

44th COSPAR Scientific Assembly, COSPAR-22-F3.1, Chemical Complexity of Molecular Universe. Athens, Greece, 16.07-24.07.2022, Organisation: L. Bizzocchi, P. Caselli, A. Das, N. Mason, C. Puzzarini, V.M. Rivilla, T. Shimonishi, B. Sivaraman.

44th COSPAR Scientific Assembly, COSPAR-22-B1.3, Astrochemistry and Composition as Adriane's Threads for Planet Formation. Athens, Greece, 16.07-24.07.2022, Organisation: P. Caselli, M. Drozdovskaya, S. L. Ivanovski, D. Stamatellos, N. Turner, D. Turrini, S. Werner, K. Zhang.

EPoS 2022 - The Early Phases of Star Formation - Insights from Dynamics. Ringberg, Germany, 24.04-29.04.2022, Organisation: A. Bacmann, P. Caselli, J. Di Francesco, R. Friesen, A. Hacar, Th. Henning, J. Kainulainen, S.-P. Lai, S. Offner, P. Schilke, J. Steinacker, A. Sternberg.

EAS2022 - European Astronomical Society Annual Meeting. Valencia, Spain, 27.06-01.07.2022, Organisation: N. Aghanim, J. Brinchmann, P. Caselli, F. Figueras, J. Fynbo, D. Gabuzda, J.C. Guirado, L. Kaper, E. Khomenko, J. Knapen, Á. Labiano, L. Lara, S. Lucatello, G. Mellema, G. Meynet, D.F. Mota, B. Namumba, H. Rauer, N. Rea, J. Read, A. Różańska, J. Schaye, R. Szabo.

The astrochemical heritage: from molecular clouds to planetary surfaces. Valencia, Spain, 30.06-01.07.2022, Organisation: A. Belloche, P. Caselli, C. Puzzarini, V.M. Rivilla, S. Viti, C. Walsh.

GRAVITY - Observing the Universe in Motion: 5 Years of GRAVITY. Ringberg, Germany, 23.10-28.10.2022, Organisation: V. Cardoso, P. Caselli, F. Eisenhauer, S. Hoenig, L. Kreidberg, A.-M. Lagrange, D. Lutz, J. Monnier, K. Perraut, G. Perrin, T. Shimizu, J. Woillez.

Cosmic Rays: the salt of the star formation recipe. Florence, Italy, 08.11-10.11.2022, Organisation: P. Caselli, A. Marcowith, M. Padovani, M.E. Palumbo, V. Rivilla.

Publications

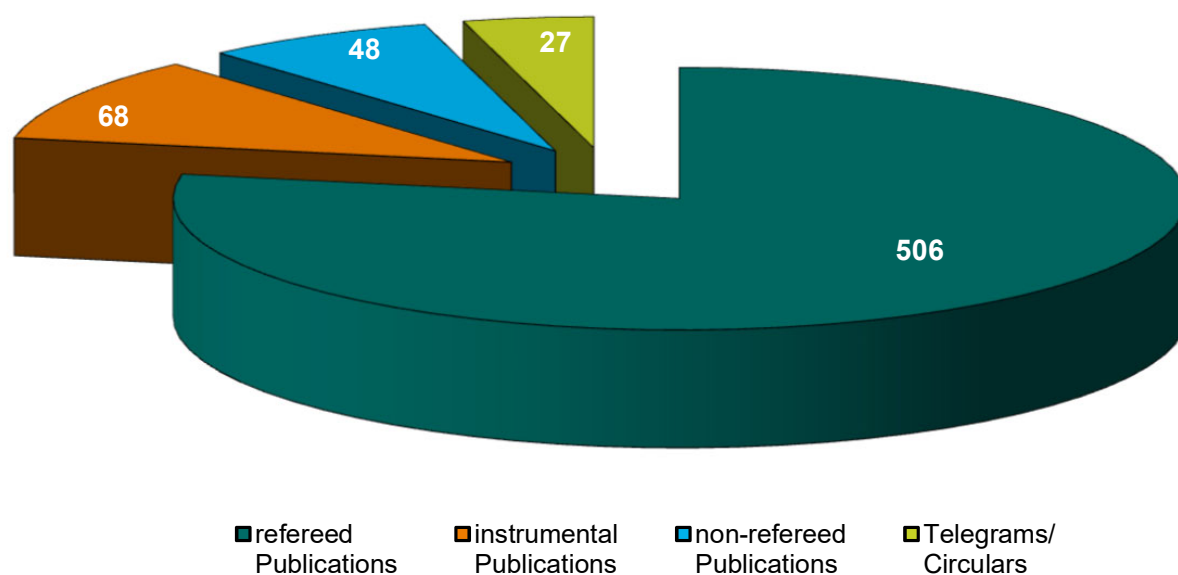
Here we present a tabular and graphical summary of our publication activities in 2022. The publications are counted by science group and publication type. The individual publications are listed consecutively

Summary of the MPE Publications in 2022

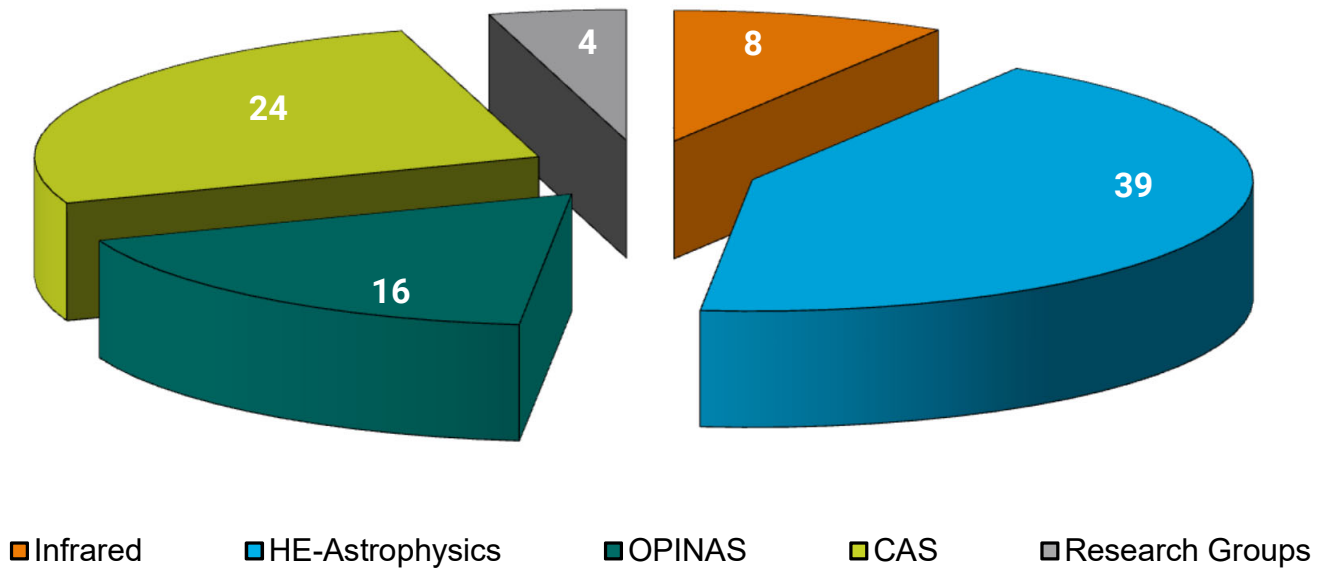
	Refereed Publications		Instrumental Publications		Not-Refereed Publications		Telegrams/Circulars		Talks		Poster
	First Author	All	First Author	All	First Author	All	First Author	All	Invited/Colloquium	All	Only First Author
IR	8	106	7	34	3	8	0	1	116	142	4
HE-Astro-physics	39	182	9	28	9	29	10	24	46	98	7
OPINAS	16	104	0	4	1	5	0	0	13	24	2
CAS	24	79	0	0	3	6	1	2	26	48	14
Re-search Groups	4	35	2	2	0	0	0	0	25	34	0
Total	91	506	18	68	16	48	11	27	226	346	27

The black entries give the number of publications with a first author from the MPE or invited talk, respectively. The red entries show the total number of publications with MPE contributions or talks (including the black numbers). Publications with contributions from more than one research group are counted for the group of the leading author. Posters are counted only if the first author is a MPE member.

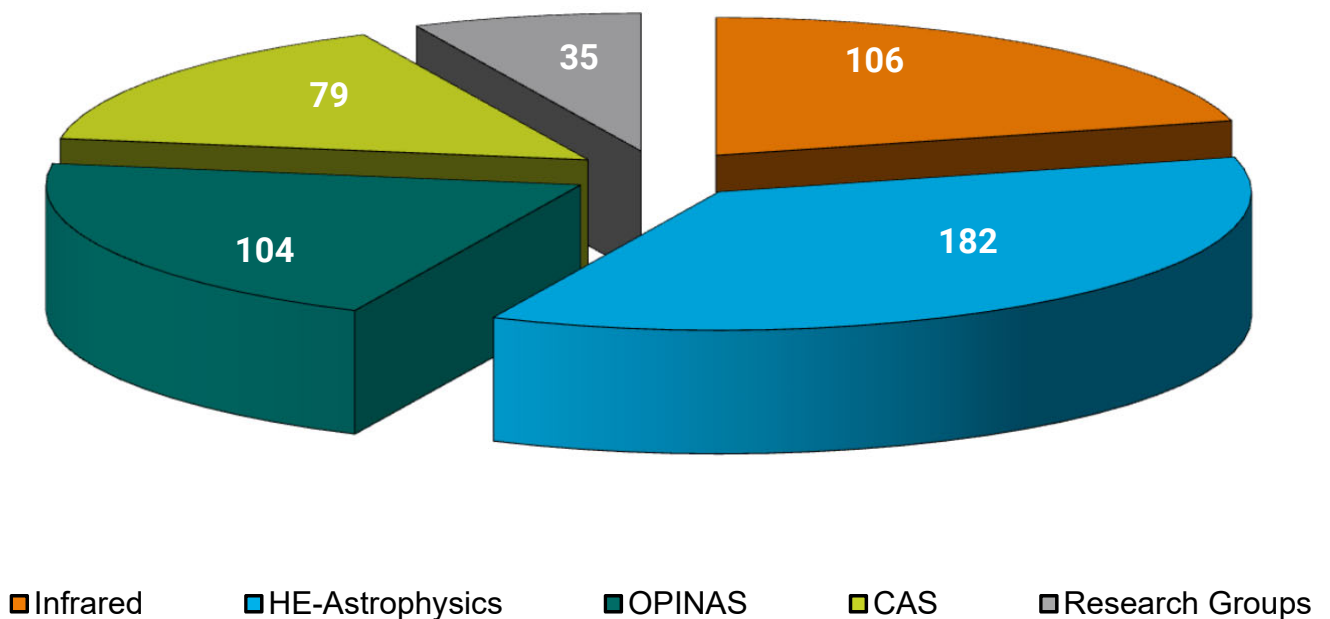
MPE Publications 2022 (by Type)



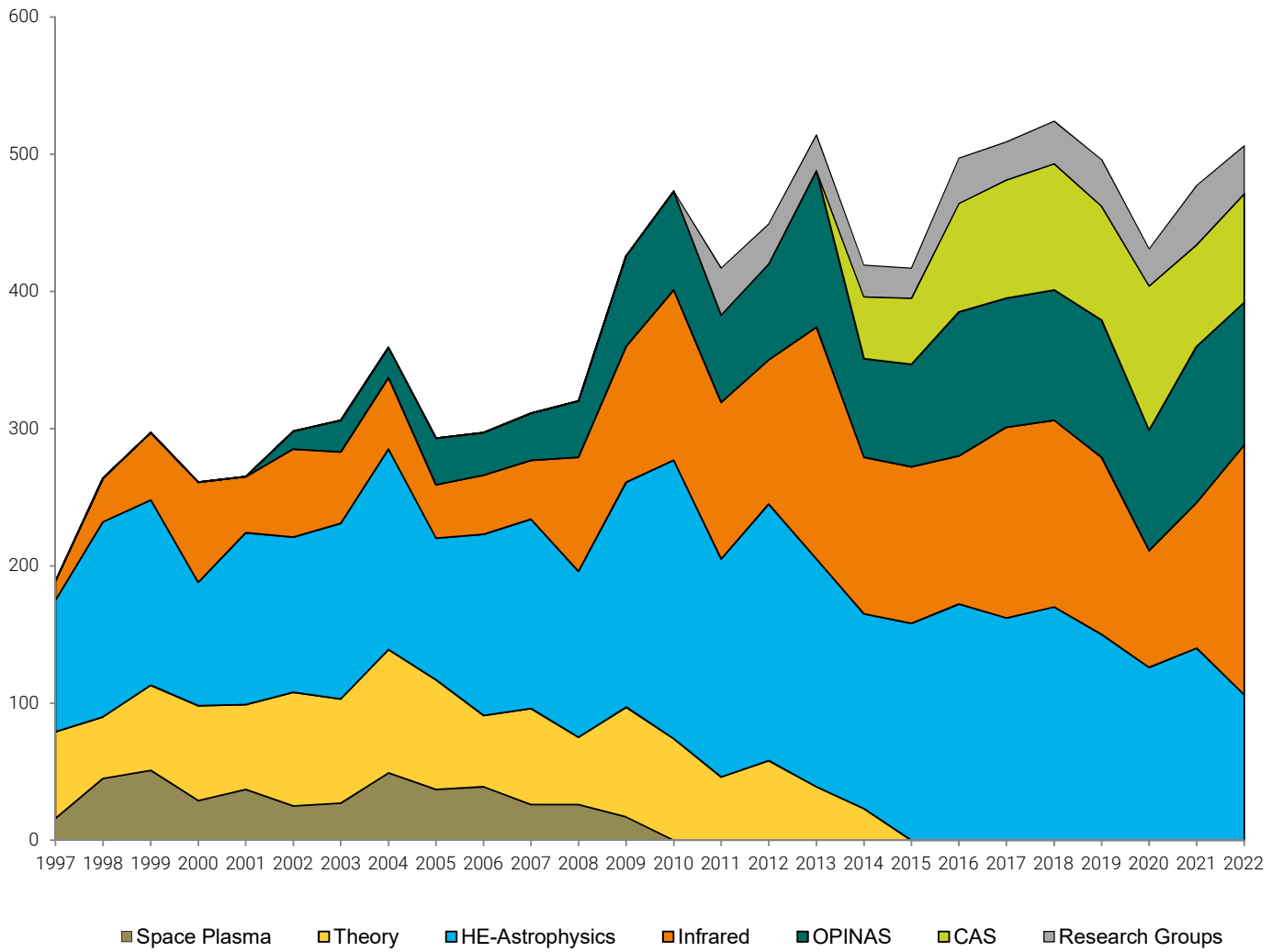
Refereed Publications with MPE first author in 2022 (by Science Group)



Total refereed MPE Publications in 2022 (by Science Group)



History of MPE Total Refereed Publications (by Science Group)



Refereed Publications

- Abbott T., M. Aguena, A. Alarcon, S. Allam, O. Alves, A. Amon, F. Andrade-Oliveira, J. Annis, S. Avila, D. Bacon, E. Baxter, K. Bechtol, M. Becker, G. Bernstein, S. Bhargava, S. Birrer, J. Blazek, A. Brandao-Souza, S. Bridle, D. Brooks, E. Buckley-Geer, D. Burke, H. Camacho, A. Campos, A. Carnero Rosell, M. Carrasco Kind, J. Carretero, F. Castander, R. Cawthon, C. Chang, A. Chen, R. Chen, A. Choi, C. Conselice, J. Cordero, M. Costanzi, M. Crocce, L. da Costa, M. da Silva Pereira, C. Davis, T. Davis, J. De Vicente, J. DeRose, S. Desai, E. Di Valentino, H. Diehl, J. Dietrich, S. Dodelson, P. Doel, C. Doux, A. Drlica-Wagner, K. Eckert, T. Eifler, F. Elsner, J. Elvin-Poole, S. Everett, A. Evrard, X. Fang, A. Farahi, E. Fernandez, I. Ferrero, A. Ferté, P. Fosalba, O. Friedrich, J. Frieman, J. García-Bellido, M. Gatti, E. Gaztanaga, D. Gerdes, T. Giannantonio, G. Giannini, D. Gruen, R. Gruendl, J. Gschwend, G. Gutierrez, I. Harrison, W. Hartley, K. Herner, S. Hinton, D. Hollowood, K. Honscheid, B. Hoyle, E. Huff, D. Huterer, B. Jain, D. James, M. Jarvis, N. Jeffrey, T. Jeltema, A. Kovacs, E. Krause, R. Kron, K. Kuehn, N. Kuropatkin, O. Lahav, P. Leget, P. Lemos, A. Liddle, C. Lidman, M. Lima, H. Lin, N. MacCrann, M. Maia, J. Marshall, P. Martini, J. McCullough, P. Melchior, J. Mena-Fernández, F. Menanteau, R. Miquel, J. Mohr, R. Morgan, J. Muir, J. Myles, S. Nadathur, A. Navarro-Alsina, R. Nichol, R. Ogando, Y. Omori, A. Palmese, S. Pandey, Y. Park, F. Paz-Chinchón, D. Petravick, A. Pieres, A. Plazas Malagón, A. Porredon, J. Prat, M. Raveri, M. Rodriguez-Monroy, R. Rollins, A. Romer, A. Roodman, R. Rosenfeld, A. Ross, E. Rykoff, S. Samuroff, C. Sánchez, E. Sanchez, J. Sanchez, D. Sanchez Cid, V. Scarpine, M. Schubnell, D. Scolnic, L. Secco, S. Serrano, I. Sevilla-Noarbe, E. Sheldon, T. Shin, M. Smith, M. Soares-Santos, E. Suchyta, M. Swanson, M. Tabbutt, G. Tarle, D. Thomas, C. To, A. Troja, M. Troxel, D. Tucker, I. Tutusaus, T. Varga, A. Walker, N. Weaverdyck, R. Wechsler, J. Weller, B. Yanny, B. Yin, Y. Zhang, J. Zuntz, DES Collaboration: Dark Energy Survey Year 3 results: Cosmological constraints from galaxy clustering and weak lensing. *Physical Review D* 105, 2 (2022).
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Kozyrev A.S., D. V. Golovin, M. L. Litvak, I. G. Mitrofanov, A. B. Sanin, Mgns/Bepicolombo Team, Hend/Mars Odyssey Team, J. Benkhoff, Bepicolombo Team, K. Hurley, Ipn, D. Svinkin, S. Golenetskii, D. Frederiks, A. Ridnaia, A. Lysenko, T. Cline, Konus-Wind Team, A. von Kienlin, X. Zhang, A. Rau, V. Savchenko, E. Bozzo, C. Ferrigno, INTEGRAL SPI-ACS Grb Team, S. Barthelmy, J. Cummings, H. Krimm, D. Palmer, A. Tohuvavohu, Swift-Bat Team, W. Boynton, C. Fellows, K. Harshman, H. Enos, and R. Grs-Odyssey Grb Team Starr: IPN triangulation of GRB 211226A, GCN Circ. 31510 (2022).

Liu Z.: SGR/eROSITA non-detection of the tidal disruption event AT2021yte. The Astronomer's Telegram (ATel), 15164 (2022).

Liu Z.: SRG/eROSITA detection of the tidal disruption event AT2022dsb. The Astronomer's Telegram (ATel), 15259 (2022).

Nicuesa Guelbenzu A., S. Klose, A. Rau: GRB 220117A, GROND observations. GCN Circ., 31522 (2022).

Nicuesa Guelbenzu A., S. Klose, A. Rau: GRB 220627A, GROND observations. GCN Circ., 32304 (2022).

Nicuesa Guelbenzu A., S. Klose, A. Rau: GRB 220706A, GROND observations. GCN Circ., 32339 (2022).

Nicuesa Guelbenzu A., S. Klose, A. Rau: GRB 220711B, GROND observations. GCN Circ., 32383 (2022).

Svinkin D., D. Frederiks, A. Ridnaia, A. Lysenko, T. Cline, Konus-Wind Team, A. von Kienlin, X. Zhang, A. Rau, V. Savchenko, E. Bozzo, C. Ferrigno, INTEGRAL SPI-ACS Team, A. Goldstein, M. S. Briggs, C. Wilson-Hodge, Fermi Gbm Team, S. Barthelmy, J. Cummings, H. Krimm, D. Palmer, A. Tohuvavohu, and Swift-Bat Team: IPN triangulation of GRB 220308A (long / very bright), GCN Circ. 31715 (2022).

Svinkin D., D. Frederiks, A. Ridnaia, A. Lysenko, T. Cline, Konus-Wind Team, A. von Kienlin, X. Zhang, A. Rau, V. Savchenko, E. Bozzo, C. Ferrigno, INTEGRAL SPI-ACS Team, A. Goldstein, M. S. Briggs, C. Wilson-Hodge, Fermi Gbm Team, S. Barthelmy, J. Cummings, H. Krimm, D. Palmer, A. Tohuvavohu, and Swift-Bat Team: IPN triangulation of GRB 220203A (short), GCN Circ. 31549 (2022).

- Svinkin D., D. Frederiks, A. Ridnaia, A. Lysenko, T. Cline, Konus-Wind Team, A. von Kienlin, X. Zhang, A. Rau, V. Savchenko, E. Bozzo, C. Ferrigno, INTEGRAL SPI-ACS Team, A. Goldstein, M. S. Briggs, C. Wilson-Hodge, Fermi Gbm Team, S. Barthelmy, J. Cummings, H. Krimm, D. Palmer, A. Tohuvavohu, and Swift-Bat Team: IPN triangulation of GRB 220130A, GCN Circ. 31548 (2022).
- Svinkin D.; D. Frederiks, A. Ridnaia, A. Lysenko, T. Cline, Konus-Wind Team, A. von Kienlin, X. Zhang, A. Rau, V. Savchenko, E. Bozzo, C. Ferrigno, INTEGRAL SPI-ACS Team, A. Goldstein, M. S. Briggs, C. Wilson-Hodge, Fermi Gbm Team, S. Barthelmy, J. Cummings, H. Krimm, D. Palmer, A. Tohuvavohu, and Swift-Bat Team: IPN triangulation of extremely bright GRB 221009A, GCN Circ. 32641 (2022).
- Tadaki, K.-I., S. Belli, A. Burkert, A. Dekel, N.M. Förster Schreiber, R. Genzel, M. Hayashi, R. Herrera-Camus, T. Kodama, K. Kohno, Y. Koyama, M.M. Lee, D. Lutz, L. Mowla, E.J. Nelson, A. Renzini, T.L. Suzuku, L.J. Tacconi, H. Übler, E. Wisnioski et al.: ALMA obs. Of UDS and GOOD-S massive galaxies. *VizieR Online Data Catalog J/ApJ*, 90, 74 (2022).
- Tamassia F., L. Bizzocchi, M. Melosso, M. Martin-Drumel, O. Piralì, A. Pietropolli Charmet, E. Canè, L. Dore, I.E. Gordon, J. Guillemin, B.M. Giuliano, P. Caselli, S. Alessandrini, V. Barone, C. Puzzarini: Synchrotron-based far-infrared spectroscopy of HC₃ N : Extended ro-vibrational analysis and new line list up to 3360 cm⁻¹. *Journal of Quantitative Spectroscopy and Radiation Transfer* 279 (2022).
- von Kienlin A. and Fermi GBM Team: Fermi Gamma-ray Burst Monitor trigger 663917434/220115230 is not a GRB, GCN Circ. 31450 (2022).
- von Kienlin A. and Fermi GBM Team: Fermi Gamma-ray Burst Monitor trigger 220111325/663580106 is not a GRB, GCN Circ. 31432 (2022).
- von Kienlin A. and Fermi GBM Team: Fermi GBM trigger 681633544/220808277 is not a GRB, GCN Circ. 32448 (2022).
- von Kienlin A. and Fermi GBM Team: Fermi GBM trigger 681719116/220809267 is not a GRB, GCN Circ. 32451 (2022).
- von Kienlin A. and Fermi GBM Team: Fermi GBM trigger 681890304/220811249 is not a GRB, GCN Circ. 32457 (2022).
- von Kienlin A. and Fermi GBM Team: Fermi GBM trigger 686565116/221004355 is not a GRB, GCN Circ. 32621 (2022).
- von Kienlin A., C. Meegan, and Fermi GBM Team: GRB 220421A: Fermi GBM observation, GCN Circ. 31936 (2022).
- von Kienlin A., C. Meegan, and Fermi GBM Team: GRB 221126A: Fermi GBM observation, GCN Circ. 32994 (2022).

Poster

Alberton, D.: High-resolution rotational spectroscopy of Aminoacrylonitrile, an amino-acid precursor candidate. EUROPEAN ASTRONOMICAL SOCIETY ANNUAL MEETING, 06/2022.

Aydar, C.: Single-density photoionization models are not complex enough to describe AGN. Multi-phase, Multi-temperature and Complex: how AGN feedback shapes the nature of the circum-galactic and halo gas in galaxy groups/ ESO, Virtual Meeting, Garching, Germany, 12/2022.

Biondi, F.: Verification Strategy for MICADO Cold Optics. SPIE Astronomical Telescopes + Instrumentation, Montreal, Canada, 07/2022.

Camilloni, F.: SRG/eROSITA observation of Vela Jr.. 1st Mondragone Frontiers of Astronomy Series: "Latest Advances in X-ray Spectroscopy and Polarimetry", Virtual Meeting, Frascati, Italy, 05/2022.

Cao, Y.: SMBH Masses from GRAVITY Observations of the Hot Dust around AGNs. In Situ View of Galaxy Formation 2, Schloss Ringberg, Bavaria, Germany, 07/2022.

Collmar, W.: Searching the COMPTEL Data for Fermi/LAT 1FLE Sources. 10th International Fermi Symposium, Johannesburg, South Africa, 10/2022.

Esposito, M.: Extension of evolution mapping to velocity statistics. COSMO'22, Rio de Janeiro, Brasil, 08/2022.

Esposito, M.: Extension of evolution mapping to velocity statistics. XV Tonale Winter School on Cosmology, Passo del Tonale, Italy, 12/2022.

Ferrer Asensio, J.: Tracing the contraction of the pre-stellar core L1544 with HC170+ J = 1-0 emission. From Clouds to Planets II: The Astrochemical Link/ Max-Planck-Institute, Berlin, Germany, 10/2022.

Freyberg, M.: SRG/eROSITA micrometeoroid hits and effects. Space Telescopes and Instrumentation 2022: Ultraviolet to Gamma Ray / SPIE, Montreal, Canada, 07/2022.

Giers, K.G.: A comparison of the deuteration in the pre-stellar core L1544 and the protostellar core HH211. EAS 2022, 07/2022.

Giers, K.G.: A comparison of the deuteration in the pre-stellar core L1544 and the protostellar core HH211. From Clouds to Planets II, 10/2022.

Jensen, S.: Matching theory to observations: A 3D physico-chemical model of the pre-stellar core L1544. From Clouds to Planets II: The Astrochemical Link (MPE), Har nack Haus, DE, 10/2022.

Kravchenko, K.: The on-sky performance of the IFU spectrograph ERIS/SPIFFIER during its commissioning phase. SPIE, Montreal, Canada, 07/2022.

Lattanzi, V.: Jet unveiled in OMC-2 FIR4 and its link to the enhanced cosmic-ray ionisation rate. European Astrono-

mical Society Annual Meeting, Virtual Meeting, Valencia, Spain, 06/2022.

Lee, L.: Disk kinematics at high-z: comparing fitting techniques and modeling tools. In Situ View of Galaxy Formation 2/ MPE, Schloss Ringberg, Germany, 07/2022.

Mayer, M.: Revealing the conditions of shocked plasma in the supernova remnant Puppis A with SRG/eROSITA. EAS Meeting 2022, Virtual Meeting, Valencia, Spain, 06/2022.

Rab, Ch.: Interpreting H₂ and [O] line emission of T Tauri disks with photo-evaporative disk wind models. Inside 2022 - The Inner Regions of Protoplanetary Disks, Schloss Ringberg, Germany, 09/2022.

Rab, Ch.: Impact of energetic particle events on the chemistry of planet-forming disks and their observational signatures. From Clouds to Planets II: The Astrochemical Link, Berlin, Germany, 10/2022.

Redaelli, E.: THE CORE POPULATION AND KINEMATICS OF A. 7th Chile-Cologne-Bonn-Symposium: Physics and Chemistry of Star Formation, Puerto Varas, Chile, 09/2022.

Seppi, R.: Offset between X-ray and optical centers in clusters of galaxies with eROSITA. Multi-phase, Multi-temperature and Complex: how AGN feedback shapes the nature of the circum-galactic and halo gas in galaxy groups, Virtual Meeting, ESO - Garching, Germany, 12.2022.

Sipilä, O.: Revised models for cosmic ray induced desorption in dense clouds. From Clouds to Planets II: The Astro-chemical Link, Berlin, Germany, 10/2022.

Spezzano, S.: 15N fractionation traces isotope-selective photodissociation towards a pre-stellar core. Multi-line Diagnostics of the Interstellar Medium, Nice, France, 04/2022.

Tabatabaei Mazraeh No, F. S.: The kinematics of the magnetised protostellar core IRAS15398-3359. EAS ANNUAL MEETING 2022, Virtual Meeting, Valencia, Spain, 06/2022.

Tabatabaei Mazraeh No, F. S.: The kinematics of the magnetised protostellar core IRAS15398-3359. INSTITUT DE RADIO ASTRONOMIE MILLIMETRIQUE, Nice, France, 04/2022.

Valdivia Mena, Maria: Asymmetric infalls discovered towards a Class I protostar in NGC1333. Multi-line diagnostics of the interstellar medium, Nice, France, 04/2022.

Zhang, Yi: Study the hot extended X-ray emission around z<0.1 galaxies with eRASS1 data. Annual Meeting of the Astronomische Gesellschaft 2022, Bremen, Germany, 09/2022.

Talks

- Alberton, D.: High-resolution rotational spectroscopy of APN, a promising amino- acid precursor. Contributed Talk, 26th International Conference on High Resolution Molecular Spectroscopy, Praha, czech republic, August 2022.
- Arcodia R., : X-ray blasts from awakening massive black holes. Colloquium, Hypatia Colloquium 2022, online, April 2022.
- Becker, Werner: Highlights from the eROSITA ISM-SNR Working Group. Invited Talk, eROSITA Consortium Meeting, Bamberg, Germany, November 2022.
- Becker, W.: eROSITA, ein deutsches Röntgenteleskop für die Erforschung des Universums. Public Talk, VHS Planegg, Planegg, Deutschland, October 2022.
- Becker, W.: Schwarze Löcher, gefräßige Monster im All?. Public Talk, VHS Planegg, Planegg, Deutschland, April 2022.
- Biltzinger, B.: Time-Resolved Spectral Catalogue of INTEGRAL/SPI GRBs. Contributed Talk, INTEGRAL 20 years - Two decades of high-energy astronomy with INTEGRAL, Darmstadt, Germany, October 2022.
- Boller, Th.: Was wissen wir über Schwarze Löcher. Public Talk, Volkshochschule Hallbergmoos, Hallbergmoos, Germany, May 2022.
- Bulbul, E.: eROSITA to Athena: Cluster Science and Cosmology with X-ray Surveys. Invited Talk, European Astronomical Society Meeting, Valencia, Spain, June 2022.
- Bulbul, E.: Tracing Baryons in Clusters of Galaxies with eROSITA. Invited Talk, Galaxy Clusters 2022: Challenging Our Cosmological Perspectives, Baltimore, USA, April 2022.
- Bulbul, E.: Tracing Baryons in Clusters of Galaxies with eROSITA. Invited Talk, AAS HEAD Meeting, Pittsburg, USA, March 2022.
- Camilloni, F.: SRG/eROSITA and XMM-Newton observations of Vela Jr.. Contributed Talk, 15th Bonn workshop 'Neutron stars and local environment', Bonn, Germany, August 2022.
- Cao, Y.: Resolved measurements of hot dust structure sizes around AGNs from GRAVITY observations. Contributed Talk, Torus2022, Leiden, Netherland, December 2022.
- Caselli, P.: From Clouds to Planets: the Astrochemical Link. Colloquium, University of Cologne, Cologne, Germany, January 2022.
- Caselli, P.: The calm before the storm: from clouds to protoplanetary disks. Colloquium, Harvard-Smithsonian Center for Astrophysics, Cambridge, USA, May 2022.
- Caselli, P.: From Clouds to Planets: the Astrochemical Link. Colloquium, INAF, Osservatorio Astrofisico di Arcetri, Florence, Italy, November 2022.
- Caselli, P.: Almost complete freeze-out in a pre-stellar core. Contributed Talk, The Early Phases of Star Formation, Ringberg, Germany, April 2022.
- Caselli, P.: Our Astrochemical Origins. Invited Talk, European Astrobiology Institute, online,, January 2022.
- Caselli, P.: Astrochemistry at the dawn of star and planet formation. Invited Talk, Multiline Diagnostics of the Interstellar Medium, Nice, France, April 2022.
- Caselli, P.: Astrochemistry: from pre-stellar cores to planets and life. Invited Talk, ESO@60: A stairway to the Universe - European Astronomical Society Annual Meeting, Valencia, Spain, June 2022.
- Caselli, P.: The S-journey, from diffuse clouds to pre-stellar cores and beyond. Invited Talk, Lorentz Center Workshop: Tracing sulfur from molecular clouds to the origins of life, Leiden, The Netherland, September 2022.
- Caselli, P.: My astrochemical journey. Public Talk, Massa Marittima High School Library, Massa Marittima, Italy, April 2022.
- Caselli, P.: Making life from stardust. Public Talk, Blaauw Public Lecture, Groningen, The Netherlands, November 2022.
- Caselli, P.: What our knowledge of the origins of life can tell us about life on Earth and its future. Public Talk, The Future of Life - Nobel Week Dialogue, Stockholm, Sweden, December 2022.
- Caselli, P.: Existential risks (nuclear war, climate change, disease, AI, threats from space). Public Talk, The Future of Life - Nobel Week Dialogue, Stockholm, Sweden, December 2022.
- Caselli, P.: Life elsewhere. Public Talk, The Future of Life - Nobel Week Dialogue, Stockholm, Sweden, December 2022.
- Collmar, W.: COMPTEL Data Analysis: A Status Report. Colloquium, Colloquium COSI Team, University of California, Berkeley, USA, Garching (Talk via Zoom), Germany, August 2022.
- Comparat, J.: X-ray large scale structure: observations and simulations. Contributed Talk, Cosmology and numerical simulations @ MIAPP, Garching bei München, Germany, May 2022.
- Comparat, J.: The hot circum-galactic medium around galaxies at $0.05 < z < 0.3$. Invited Talk, SAB Fachbeirat, Garching bei München, Germany, June 2022.
- Comparat, J.: X-ray large scale structures: observations and simulations. Contributed Talk, Cosmology from home conference, online, July 2022.
- Comparat, J.: The cosmic web of X-ray AGNs. Invited Talk, COSPAR, Athens, Greece, July 2022.
- Comparat, J.: The hot circum-galactic medium around ga-

laxies at $0.05 < z < 0.3$. Contributed Talk, COSPAR, Athens, Greece, July 2022.

Comparat, J.: The cosmic web of galaxies seen in X-ray by eROSITA. Invited Talk, IAU, division J (online participation), Busan, Korea, August 2022.

Comparat, J.: The cosmic web of X-ray AGN. Contributed Talk, Deutsche AG, Bremen, Germany, Sept 2022.

Comparat, J.: Overview of legacy survey DR10. Contributed Talk, 4MOST all hands meeting, Potsdam, Germany, Sept 2022.

Comparat, J.: Overview of legacy survey DR10. Contributed Talk, eROSITA collaboration meeting, Bamberg, Germany, November 2022.

Comparat, J.: X-ray emission around star-forming & quiescent galaxies at $0.05 < z < 0.3$. Contributed Talk, Athena collaboration meeting, Barcelona, Spain, November 2022.

Comparat, J.: Consortium Survey 5. eROSITA galaxy cluster survey. Invited Talk, 4MOST science presentations <https://www.4most.eu/cms/news/2022/science-presentations/>, online, November 2022.

Comparat, J.: Review talk. The elusive hot phase of the CGM and its interplay with the AGN feedback (review with an X-ray eROSITA focus). Invited Talk, Multi-phase, Multi-temperature and Complex: how AGN feedback shapes the nature of the circum-galactic and halo gas in galaxy groups, Garching bei München, Germany, December 2022.

Comparat, J.: The cosmic web of X-ray AGN. Contributed Talk, Multi-phase, Multi-temperature and Complex: how AGN feedback shapes the nature of the circum-galactic and halo gas in galaxy groups, Garching bei München, Germany, December 2022.

Correa, C.M.: Cosmic voids as cosmological laboratories. Colloquium, Cosmology Seminar / University of Oslo, Oslo, Norway, November 2022.

Correa, C.M.: Cosmic voids as cosmological laboratories. Contributed Talk, Dark Energy Connector Science Day / Excellence Cluster ORIGINS, Munich, Germany, November 2022.

Correa, C.M.: Cosmic voids as cosmological laboratories. Invited Talk, 64th Annual Meeting / Asociación Argentina de Astronomía / PhD Thesis Prize, Buenos Aires, Argentina, September 2022.

Correa, C.M.: Cosmic voids as cosmological laboratories. Invited Talk, Workshop on Classical Gravity and Applications / ICTP SAIFR / PhD Thesis Prize, São Paulo, Brasil, August 2022.

Correa, C.M.: Redshift-space effects in voids and their impact on cosmological tests. Contributed Talk, Cosmorus VI / Astronomical Observatory of Córdoba, Córdoba, Argentina, April 2022.

Davies, R.: ERIS, MICADO, and a View towards visible AO. Invited Talk, Keck Diffraction-Limited Visible-Light Roadmap, online, USA, April 2022.

Davies, R.: MICADO and MAORY: ELT first light imager and MCAO system. Invited Talk, Solar System Science with the ELT, online, Germany, April 2022.

Davies, R.: The final design of MICADO, the first light ELT camera. Contributed Talk, Ground-based and Airborne Instrumentation for Astronomy IX, Montreal, Canada, April 2022.

Davies, R.: ERIS first light results. Invited Talk, Adaptive Optics Systems VIII, Montreal, Canada, April 2022.

Dennerl, K.: eROSITA Calibration and First Results. Invited Talk, IACHEC Special Plenary Talks (<https://iachec.org/special-plenary-talks/>), (remote), (remote), April 2022.

Drescher, A.: Imaging of faint stars in the Galactic Center with GRAVITY. Contributed Talk, Exeter, UK, April 2022.

Drescher, A.: GRAVITY+ Wide: Towards hundreds of $z \sim 2$ AGN. Contributed Talk, Montréal, Canada, July 2022.

Drescher, A.: Infrared Interferometry of the Galactic Center Black Hole. Contributed Talk, Bremen, Germany, September 2022.

Drescher, A.: Tracing the orbits of stars within 100 mas of Sgr A* with GRAVITY. Invited Talk, Fachbeirat 2022, Munich, Germany, June 2022.

Drescher, A.: Stars within the inner 250 mas of Sgr A*. Invited Talk, Observing the Universe in Motion: 5 Years of GRAVITY, Kreuth, Germany, October 2022.

Drescher, A.: GRAVITY am Very Large Telescope Interferometer. Public Talk, Munich, Germany, July 2022.

Drescher, A.: GRAVITY am Very Large Telescope Interferometer. Public Talk, Munich, Germany, October 2022.

Eisenhauer, F.: The Galactic Center black hole, the effects of General Relativity, and how to observe them. Colloquium, Séminaire général de physique de l'Institut Polytechnique de Paris, Paris, Palaiseau, France, December 2022.

Eisenhauer, F.: 5 Years of GRAVITY – A Revolution in High Angular Resolution Astronomy. Invited Talk, Observing the Universe in Motion: 5 Years of GRAVITY, Schloss Ringberg, Germany, October 2022.

Eisenhauer, F.: GRAVITY Results on SgrA*, EHT - Gravity meeting on SgrA*. Invited Talk, Nijmegen, The Netherlands, September 2022.

Eisenhauer, F.: A New Era of High Angular Resolution Astronomy, Gruber Cosmology Prize Lecture. Invited Talk, IAU XXXIst General Assembly, Busan, Republic of Korea, August 2022.

Eisenhauer, F.: Infrared Interferometry of the Galactic Center Black Hole. Invited Talk, 23rd International Conference on General Relativity and Gravitation, Beijing (Remote), People's Republic of China, July 2022.

Eisenhauer, F.: A New Era of Interferometry with GRAVITY+, Why Large Telescopes are Good for Interferometry. Invited Talk, Genzel @ 70 Conference, Schloss Ringberg, Germany, June 2022.

Eisenhauer, F.: The Richness and Power of Near Infrared

- Interferometry, Assembling the ngEHT: Community-Driven Science to a Global Instrument. Invited Talk, EHT Meeting, Granada, Spain, June 2022.
- Eisenhauer, F.: A New Era of Interferometry with GRAVITY(+). Colloquium, Osservatorio Astrofisico di Arcetri, Florence, Italy, May 2022.
- Eisenhauer, F.: Exploring the Supermassive Black Hole at the Centre of the Milky Way. Public Talk, The Sharpest Eyes on the Sky Conference, Exeter, United Kingdom, April 2022.
- Eisenhauer, F.: Astronomy at Highest Angular Resolution Adaptive Optics, Interferometry and Black Hole. Invited Talk, Stern-Gerlach Medal Prize Talk, DPG Frühjahrstagung, Heidelberg (Remote), Germany, March 2022.
- Eisenhauer, F.: A New Era of Interferometry with GRAVITY(+). Colloquium, Astralis Colloquium, Remote, Australia, February 2022.
- Endres, C. P.: THE SOLEIL VIEW ON PROTOTYPICAL ORGANIC NITRILES: THE ^{13}C SPECIES OF ETHYL CYANIDE. Contributed Talk, 76th International Symposium on Molecular Spectroscopy, Urbana, USA, June 2022.
- Esposito, M.: Extension of evolution mapping to velocity statistics. Invited Talk, Dark Energy Connector (CN-4) Science Day, Garching bei Munchen, Germany, November 2022.
- Ferrer Asensio, J.: Millimetre and sub-millimetre spectroscopy of doubly deuterated acetaldehyde (CHD_2CHO) and first detection towards IRAS 16293-2422. Colloquium, Tokyo, Japan, December 2022.
- Ferrer Asensio, J.: Millimetre and sub-millimetre spectroscopy of doubly deuterated acetaldehyde (CHD_2CHO) and first detection towards IRAS 16293-2422. Contributed Talk, Prague, Czech Republic, August 2022.
- Ferrer Asensio, J.: Millimetre and sub-millimetre spectroscopy of doubly deuterated acetaldehyde (CHD_2CHO) and first detection towards IRAS 16293-2422. Contributed Talk, Online, June 2022.
- Freund, S.: The stellar content of the first eROSITA all-sky survey. Contributed Talk, Annual Meeting of the Astronomische Gesellschaft 2022, Bremen, Germany, September 2022.
- Friedrich, P.: X-ray test and calibration of the Einstein Probe Follow-up telescope. Contributed Talk, International Workshop on Astronomical X-ray Optics, Prague, Czech Republic, August 2022.
- Förster Schreiber, N. M.: Dust, gas, SFR, and dynamical properties of high- z galaxies. Invited Talk, The Growth of Galaxies in the Early Universe – VII, Sesto, Italy, March 2022.
- Förster Schreiber, N. M.: Galaxy dynamics at cosmic noon. Invited Talk, Festive Colloquium at Ringberg Castle celebrating Reinhard Genzel's career and 70th birthday, Ringberg, Germany, June 2022.
- Förster Schreiber, N. M.: Stellar feedback and galaxy evolution at high z : observational perspective. Invited Talk, A Holistic View of Stellar Feedback and Galaxy Evolution, Ascona, Switzerland, July 2022.
- Förster Schreiber, N. M.: Outflows and inflows in $z \sim 1-3$ star-forming galaxies. Invited Talk, In Situ View of Galaxy Formation 2, Ringberg, Germany, July 2022.
- Förster Schreiber, N. M.: Star-forming galaxies at cosmic noon. Invited Talk, Alvio@80 – Of Stars and Galaxies: Open Routes and Future Horizons Charted by a Curious Venetian Explorer, Chania, Crete, Greece, September 2022.
- Förster Schreiber, N. M.: Clumps in high- z galaxies: an observational perspective. Invited Talk, MIAPP Workshop: Star-forming Clumps and Clustered Starbursts Across Cosmic Time, Garching, Germany, October 2022.
- Förster Schreiber, N. M.: Star Forming Galaxies at Cosmic Noon. Colloquium, INAF/Osservatorio Astrofisico di Arcetri, Florence, Italy, April 2022.
- Förster Schreiber, N. M.: Star Forming Galaxies at Cosmic Noon. Colloquium, Max-Planck-Institut fuer Astrophysik, Special Seminar Series on Galaxy Formation, Garching, Germany, May 2022.
- Förster Schreiber, N. M.: Star Forming Galaxies at Cosmic Noon. Colloquium, Astronomy & Atmospheric Physics, National Space Institute, Technical University of Denmark, Lyngby, Denmark, 18.05.2022.
- Förster Schreiber, N. M.: Star Forming Galaxies at Cosmic Noon. Colloquium, Sydney Institute for Astronomy, University of Sydney, Australia, Sydney, Australia, 28.10.2022.
- Genzel, R.: A 40-Year Journey. Invited talk (remote), The National Academy of Sciences India, Delhi Chapter, India, January 2022.
- Genzel, R.: Eine 40-jährige Reise. Invited Nobel talk (remote), 25. Bad Honnefer Winterseminare, Bad Honnef, Germany, January 2022.
- Genzel, R.: Nobel LAB 360Grad. Invited Talk, film- and multimedia project for the Lindau Nobel Laureate Meetings (recorded speech and interview), Garching, Germany, February 2022.
- Genzel, R.: Nobel Talks. Invited Talk (remote), Students Union of Instituto Superior Técnico (AEIST), University of Lisbon, Lisbon, Portugal, March 2022.
- Genzel, R.: Galaxien und schwarze Löcher. Invited lecture (remote), vhs wissen life, Ottobrunn, Germany, March 2022.
- Genzel, R.: The European Southern Observatory: current and future capabilities. Invited Talk (remote), Israeli Academy for Sciences, Jerusalem, Israel, March 2022.
- Genzel, R.: Galaxien und schwarze Löcher. Invited Talk (remote), Netzwerk Teilchenwelt, Wuppertal, Germany, March 2022.
- Genzel, R.: AHA Momente. Invited Talk, recorded interview for the BIOTOPIA exhibition at Schloss Nymphenburg, Munich, Germany, March 2022.

Genzel, R.: A 40-Year Journey. Colloquium (remote) at Albert Einstein Institute (AEI), Potsdam-Golm, Germany, March 2022.

Genzel, R.: Testing General Relativity and the Existence of Black holes with Large Telescopes and Interferometry. Invited Talk, ESFRI Conference, Paris, France, March 2022.

Genzel, R.: Cosmic evolution of dense gas and of star forming disk galaxies. Invited Talk, Observatoire de Paris, Paris, France, March 2022.

Genzel, R.: A 40-Year Journey. Invited Talk, Académie des Sciences, Paris, France, March 2022.

Genzel, R.: Grußwort. Invited Talk, Fachtagung Quantenphysik und gymnasiale Bildung, Munich, Germany, April 2022.

Genzel, R.: Significance and evolution of molecular gas during the star formation noon. Invited Talk, IRAM conference: Multi-line Diagnostics of the Interstellar Medium, Nice, France, April 2022.

Genzel, R.: State of the field and the role of the IRAM Community. Invited Talk, IRAM conference: Multi-line Diagnostics of the Interstellar Medium, Nice, France, April 2022.

Genzel, R.: A 40-Year Journey. Invited talk (remote), Puerto de Ideas Science Festival Antofagasta, Antofagasta, Chile, April 2022.

Genzel, R.: Galaxien und schwarze Löcher. Public talk, Kulturhaus Laupheim, Laupheim, Germany, April 2022.

Genzel, R.: Eine 40-jährige Reise. Invited Talk, Spendengala Planetarium Laupheim, Laupheim, Germany, April 2022.

Genzel, R.: Das Schwarze Loch im Galaktischen Zentrum als Testobjekt der Relativitätstheorie: Eine vierzigjährige Reise. Invited Talk, DLR, Köln, Cologne, Germany, May 2022.

Genzel, R.: A 40-Year Journey. Invited Talk, ELEMENTS Annual Conference, Frankfurt am Main, Germany, May 2022.

Genzel, R.: Galaxien und schwarze Löcher. Public Talk, University of Frankfurt, Frankfurt am Main, Germany, May 2022.

Genzel, R.: A 40-Year Journey. Invited Talk, MPI Festkörper, Stuttgart, Germany, May 2022.

Genzel, R.: Eine 40-jährige Reise. Invited Talk, PLANCKS22, LMU Muenchen, Munich, Germany, May 2022

Genzel, R.: Eine 40-jährige Reise. Invited Talk, Symposium 100 Jahre Einstein, Einstein-Center, Ulm, Germany, May 2022.

Genzel, R.: A 40-Year Journey. Invited Talk (remote), Frontiers of Fundamental Physics (FFP15), University of Istanbul, Istanbul, Turkey, May 2022.

Genzel, R.: Galaxien und schwarze Löcher. Invited Talk,

Symposium Würzburger Wissenschaftliche Gesellschaft, Würzburg, Germany, May 2022.

Genzel, R.: Nobel Lecture: A 40-Year Journey. Invited Talk (remote), University of Gothenburg Chalmers, Gothenburg, Sweden, June 2022.

Genzel, R.: The Formation and Evolution of Star-Forming Galactic Disks. Invited Talk (remote), Conference: From Stars to Galaxies, Gothenburg, Sweden, June 2022.

Genzel, R.: Plans for the Next 40 Years and Other Musings. Invited Talk, Ringberg Festive Colloquium for Reinhard Genzel's 70th Birthday, Tegernsee, Germany, June 2022.

Genzel, R.: A 40-Year Journey. Invited Talk, ISD Research Retreat, Ammersee, Germany, June 2022.

Genzel, R.: Cosmic evolutions of star-forming disk galaxies: What have we learned from observations? Contributed Talk, In Situ Galaxy II, Ringberg Colloquium, Tegernsee, Germany, July 2022.

Genzel, R.: Galaxien und schwarze Löcher. Invited Talk, Berthold-Gymnasium, Freiburg i.B., Germany, July 2022.

Genzel, R.: Eine 40-jährige Reise. Invited Talk (remote), Lehrerfortbildung Physik- und Astronomie-Didaktik an der Physikalisch-Astronomischen Fakultät der Friedrich-Schiller-Universität Jena, Jena, Germany, July 2022.

Genzel, R.: Star-forming disk galaxies at cosmic noon. Invited Talk, Santa Cruz Galaxy Workshop, Santa Cruz, CA, USA, August 2022.

Genzel, R.: Forschung am Max Planck Institut für extraterrestrische Physik, Invited Talk, official visit of Stm. Florian Herrmann at Max-Planck-Institute for Extraterrestrial Physics, Garching, Germany, September 2022.

Genzel, R.: The formation and evolution of star-forming galactic disks. Invited Talk (remote), Alvio@80 Conference, Crete, Greece, September 2022.

Genzel, R.: The Black Hole at the Galactic Center. Invited Talk, Pontifical Academy of Sciences Plenary Session 2022, Vatican City, September 2022.

Genzel, R.: A 40-Year Journey. Invited Talk, World General Congress for Optics and Photonics of the International Commission for Optics (ICO) and the international society on Optics Within Life Sciences (OWLS), Dresden, Germany September 2022.

Genzel, R.: Eine 40-jährige Reise zum Zentrum der Milchstraße. Invited Talk, Gesellschaft Deutscher Naturforscher und Ärzte, GDNÄ, Leipzig, Germany, September 2022.

Genzel, R.: A 40-Year Journey. Invited Talk, Lindau Lecture, Heidelberg Laureate Forum, Heidelberg, Germany, September 2022.

Genzel, R.: Building up the Observing Power of IRAM (per aspera ad astra). Invited Talk at NOEMA Inauguration, SuperDevoluy, France, September 2022.

Genzel, R.: The formation and evolution of star-forming

- galaxies. Colloquium, Studierendenseminar, Heinrich-Herz-Professur, Karlsruher Institut für Technologie (KIT), Karlsruhe, Germany, October 2022.
- Genzel, R.: Galaxien und schwarze Löcher. Invited Talk, Heinrich-Herz-Professur, Karlsruher Institut für Technologie (KIT), Karlsruhe, Germany, October 2022.
- Genzel, R.: Eine 40-jährige Reise. Invited Talk, Volkssternwarte München, München, Germany, October 2022.
- Genzel, R.: The Galactic Center with GRAVITY. Invited Talk, Workshop: Observing the Universe in Motion – 5 Years of GRAVITY, Ringberg, Tegernsee, Germany, October 2022.
- Genzel, R.: The Cosmic Evolution of Galaxies and their Central Black Holes. Colloquium, IMPRS Lectures, November 2022
- Genzel, R.: The Formation and Evolution of Galaxies and Massive Black Holes. Invited Talk, (remote), WE-Heraeus-Symposium, Berlin, Germany, November 2022.
- Genzel, R.: MINT-Fächer fördern, Zukunftschancen schaffen. Invited Talk, Podiumsdiskussion, MIT Club of Germany, Residenz, München, Germany, November 2022.
- Genzel, R.: Eine 40jährige Reise. Invited Talk, MIT Club of Germany, Deutsches Museum, München, Germany, November 2022.
- Genzel, R.: Galaxien und Schwarze Löcher. Invited Talk, Planetarium Mannheim, Mannheim, Germany, November 2022.
- Genzel, R.: Galaxien und Schwarze Löcher – unsichtbare Supermasse in unserer Galaxie. Invited Talk, Deutsch-Amerikanisches Institut, Heidelberg, Germany, November 2022.
- Genzel, R.: A 40-Year Journey. Invited Talk, colloquium at Österreichische Akademie der Wissenschaften, Wien, November 2022.
- Genzel, R.: Astrophysik und Kosmologie in unserer Milchstraße und darüber hinaus. Invited Talk, followed by moderated discussion with Ulrich Walter, Großveranstaltung mit Schulwerk Augsburg, Reach for the stars – Astrophysik und Raumfahrttechnik hautnah, Augsburg, Germany, November 2022.
- Genzel, R.: A 40-Year Journey: from challenging experiments to fundamental astrophysics results. Invited Talk, Stockholm University, Sweden, December 2022
- Genzel, R.: Our Road to the Nobel Prize. Invited Talk, panel discussion with physics and chemistry laureates 2020 and 2021, seminar for young researchers, Stockholm, Sweden, December 2022.
- Genzel, R.: The Galactic Center Black Hole. Invited Talk, panel discussion, Uppsala University, December 2022.
- Genzel, R.: Galaxien und Schwarze Löcher. Invited Talk (remote), Kamingespräch Q+Workshop-Reihe „Big Thoughts“, University of Mainz, Mainz, Germany, December 2022.
- Genzel, R.: Status & Future of the MPE-IR Group: from challenging experiments to fundamental astrophysics results. Invited Talk, MPE/MPA Kuratorium, December 2022
- Gerhard, O.: What is the origin of the bar/bulge stellar population around the Galactic Centre?. Invited Talk, The Puzzles of the Galactic Centre, Heidelberg, Germany, September 2022.
- Gerhard, O.: Summary & topical discussions: Dynamics & Comparison with nearby galaxies. Invited Talk, The Puzzles of the Galactic Centre, Heidelberg, Germany, September 2022.
- Gerhard, O.: The Galactic Bar. Invited Talk, Ken Freeman @80: What is the Milky Way telling us about galaxy formation and evolution in general?, Perth, Australia, September 2022.
- Gerhard, O.: A new view of Galactic bar from abundance and age gradients. Invited Talk, Abundance gradients to trace galaxy formation and evolution, Sesto, Italy, March 2022.
- Gerhard, O.: Dynamics and Chemo-Dynamics of the Galactic Bar. Contributed Talk, Linking the Galactic and Extragalactic, Wollongong, Australia, November 2022.
- Gillessen, S.: 2021 Update: GRAVITY in the Galactic Center. Invited Talk, BlackHoleCam Plenary, Zoom, Germany, January 2022.
- Gillessen, S.: The mass distribution in the Galactic Center. Invited Talk, Intermediate Mass Black Holes: new science from stellar evolution to cosmology. San Juan, Puerto Rico, May 2022.
- Gillessen, S.: The mass distribution in the Galactic Center from interferometric astrometry of multiple stellar orbits. Invited Talk, Gemini Science User Meeting, Seoul, South Korea, July 2022.
- Gillessen, S.: R0. Invited Talk, 5 Years of GRAVITY, Schloss Ringberg, Germany, October 2022.
- Gillessen, S.: General relativistic effects around the Galactic Center black hole. Invited Talk, WE-Heraeus Seminar: The Variable Multi-Messenger Sky, Krakow, Poland, November 2022.
- Gillessen, S.: The Galactic Center Story. Invited Talk, Festive Colloquium on the Occasion of Reinhard Genzel, Schloss Ringberg, Germany, June 2022.
- Gillessen, S.: Einstein im Test – Das Schwarze Loch im Zentrum der Milchstraße. Public Talk, Karl Rahner Akademie, Köln, Germany, May 2022.
- Gillessen, S.: Kepler, Einstein und das Schwarze Loch im Zentrum der Milchstraße. Public Talk, Gedenkveranstaltung Johannes Kepler, Weil der Stadt, Germany, September 2022.
- Grant, S.: Probing the terrestrial planet-forming zone: Utilizing high spectral resolution, spatial resolution, and sensitivity. Contributed Talk, IR2022, Munich, Germany, February 2022.

Grant, S.: The Accretion Rate-Disk Mass Relationship for Herbig Ae/Be Stars. Colloquium, ESO Star and Planet Formation Seminar, Garching, Germany, May 2022.

Grant, S.: The Accretion Rate-Disk Mass Relationship for Herbig Ae/Be Stars. Colloquium, SMA Seminar, Cambridge, United States, May 2022.

Grant, S.: Probing the inner 10 AU of disks with infrared spectroscopy. Invited Talk, The Inner Regions of Protoplanetary Disks, Tegernsee, Germany, September 2022.

Grant, S.: Probing the inner 10 AU of disks with infrared spectroscopy. Invited Talk, Observing the Universe in Motion: 5 Years of GRAVITY, Tegernsee, Germany, October 2022.

Haberl, F.: X-ray binaries in the eROSITA all-sky surveys. Invited Talk, Annual Meeting of the German Astronomical Society 2022, Bremen, Germany, September 2022.

Haerendel, G.: Efforts to create and save the Cluster Mission. Invited Talk, Cluster 22nd Anniversary Symposium, Darmstadt, Germany, November 2022.

Herrmann, T.: Public Outreach Activities of the Max Planck Institute for Extraterrestrial Physics. Invited Talk, SHARING AHEAD 2022, Rome, Italy, November 2022.

Herrmann, Maximilian: Mitigation of bandwidth limitation induced crosstalk on Athena's WFI. Contributed Talk, SPIE Space Telescopes and Instrumentation: Ultraviolet to Gamma Ray, Montréal, Canada, July 2022.

Hsieh, T.H.H.: Temperature and Kinematic structure of the burst-phase protobinary SVS13A using CH₃CN and DCN. Invited Talk, COSPAR, Athens, Greece, July 2022.

Igo, Z.: An X-ray and Radio View of the Different Modes of AGN Accretion and Feedback with eROSITA and LOFAR. Contributed Talk, BLACK HOLE ACCRETION UNDER THE X-RAY MICROSCOPE, Madrid, Spain, June 2022.

Igo, Z.: An X-ray and Radio View of the Different Modes of AGN Accretion and Feedback with eROSITA and LOFAR. Contributed Talk, EAS 2022, Valencia, Spain, June 22.

Igo, Z.: An X-ray and Radio View of the Different Modes of AGN Accretion and Feedback with eROSITA and LOFAR. Contributed Talk, What Drives the Growth of Black Holes?, Reykjavik, Iceland, September 2022.

Ivlev, A.: Non-reciprocity in quasi-two-dimensional complex plasmas. Invited Talk, APS March Meeting 2022, Chicago, USA, March 2022.

Ivlev, A.: Radiolysis and sputtering of CO ice by cosmic rays: Experimental insights into the underlying mechanisms. Contributed Talk, From Clouds to Planets II: The Astrochemical Link, Berlin, Germany, October 2022.

Kravchenko, K.: Tomography of evolved star atmospheres. Colloquium, Hypatia Colloquium: Early Career Astronomer series at ESO, Garching, Germany, May 2022.

Laas, J.: 4MOST Commissioning Software: Front-End. Invited Talk, 4MOST All Hands Meeting 2022, Potsdam, Germany, September 2022.

Laas, J.: 4MOST Operation Rehearsals: OpR3-ESO_1b &

OpR3-Slow. Invited Talk, 4MOST All Hands Meeting 2022, Potsdam, Germany, September 2022.

Lattanzi, V.: Laboratory spectroscopy of sulphur bearing species. Invited Talk, GEMS Collaboration Meeting, Madrid, Spain, June 2022.

Lattanzi, V.: Laboratory spectroscopy of sulphur bearing species. Invited Talk, III Chilean Astrochemistry School, Santiago, Chile, December 2022.

Liu, D.: Millimeter spectroscopy of the most massive/dusty galaxies in the first ~0.9-1.8 Gyr of the young universe. Contributed Talk, COSMOS Team Meeting 2022, Paris, France, July 2022.

Liu, D.: CO and CI tracing gas compression/shocks and stellar feedback and their analytical conversion factors. Invited Talk, Theory Meets Observations 2022: Star Formation Physics Probed in Nearby Galaxies, Heidelberg, Germany, December 2022.

Liu, D.: Overview: From Milky Way to High-Redshift Galaxies and evolution of galaxy star formation, cold molecular gas, and dark matter fraction. Invited Talk, 14th IMPRS Symposium, Garching, Germany, December 2022.

Liu, Z.: Deciphering the extreme X-ray variability of an eROSITA discovered nuclear transient. Contributed Talk, Black Hole accretion under the X-ray microscope, Madrid, Spain, June 2022.

Liu, Z.: Deciphering the extreme X-ray variability of an eROSITA discovered nuclear transient. Contributed Talk, EUROPEAN ASTRONOMICAL SOCIETY ANNUAL MEETING 2022, Valencia, Spain, June 2022.

Liu, Z.: Tidal Disruption Events detected by eROSITA. Contributed Talk, Annual Meeting of the Astronomische Gesellschaft, Bremen, Germany, September 2022.

Liu, A.: Studying galaxy clusters with eROSITA. Invited Talk, Annual Meeting of the Astronomische Gesellschaft 2022, Bremen, Germany, September 2022.

Liu, A.: New results on galaxy clusters from eROSITA observations: From eFEDS to eRASS. Invited Talk, 1st Mondragone Frontiers of Astronomy Series, Rome, Italy, May 2022.

Locatelli, N.: The Milky Way hot circumgalactic medium as seen by eROSITA. Contributed Talk, Annual Meeting of the German Astronomical Society, Bremen, Germany, September 2022.

Mang, M.: Deep images of the Galactic Center with GRAVITY. Contributed Talk, SPIE Astronomical Telescopes + Instrumentation, 2022, Montréal, Québec, Canada, Montréal, Canada, July 2022.

Mayer, M.: Tracing the kinematics of central compact objects in the context of their parent supernova remnants. Contributed Talk, EAS Meeting 2022, Valencia, Spain, June 2022.

Mayer, M.: Characterizing thermal and nonthermal X-ray emission in the Vela supernova remnant with SRG/eROSITA. Contributed Talk, AG Meeting 2022, Bremen, Germany, September 2022.

- Merloni, A.: eROSITA Mission Status. Invited Talk, 5th CAS-ESA-MPE Einstein Probe workshop (remote), München, Germany, January 2022.
- Merloni, A.: eROSITA on SRG: Mapping the Hot and Energetic Universe. Colloquium, AEI Potsdam Colloquium, München, Germany, February 2022.
- Merloni, A.: eROSITA on SRG: Mapping the Hot Universe. Invited Talk, AAS HEAD Meeting (remote), München, Germany, March 2022.
- Merloni, A.: eROSITA on SRG: Mapping the Hot Universe. Colloquium, Heidelberg Joint Astronomical Colloquium, Heidelberg, Germany, May 2022.
- Merloni, A.: First results and highlights from eROSITA. Invited Talk, X-ray Astronomy Research in China (remote), München, Germany, June 2022.
- Merloni, A.: The eROSITA all-sky X-ray survey. Invited Talk, EAS Session: 'The universe in multi-color: synergies between J-PAS and other wide area surveys', Valencia, Spain, July 2022.
- Merloni, A.: Early Results from eROSITA. Invited Talk, From the Dolomites to the event horizon: sledging down the black hole potential well, Sexten, Italy, July 2022.
- Merloni, A.: Early results from eROSITA on SRG. Invited Talk, COSPAR Session: 'Spectral/Timing/Polarimetry Properties of AGN: Theory and Observations of the Inner Workings in these Objects', München, Germany, July 2022.
- Merloni, A.: The eROSITA all-sky X-ray survey. Invited Talk, LSST@Europe4, Rome, Italy, October 2022.
- Merloni, A.: Highlights from eROSITA on SRG and prospects of wide X-ray surveys in the 2030s. Invited Talk, Exploring the Hot and Energetic Universe: the third scientific conference dedicated to the Athena X-ray Observatory, Barcelona, Spain, November 2022.
- Merloni, A.: eROSITA on SRG: Mapping the Hot Universe. Colloquium, Hellenic Astronomical Society (remote), München, Germany, December 2022.
- Merloni, A.: Early results from eROSITA (all-sky) X-ray surveys. Invited Talk, XVIII JPAS Meeting (remote), München, Germany, December 2022.
- Müller, T.: No one gets closer to the Sun: Thermophysical properties of Atira object 2021 PH27. Contributed Talk, European Planetary Science Congress (EPSC) 2022, Granada, Spain, September 2022.
- Müller, T.: Mission-target asteroids: thermal-IR characterization from ground. Contributed Talk, An Infrared Bright Future for Ground-based IR Observatories in the Era of JWST (IR2022), Online, Japan, February 2022.
- Müller, T.: Experimente auf/an Asteroiden: Landung, Probenentnahme, Abwehr, Forschung. Public Talk, Volkshochschule München Nord, Wissenschaftliche Vortragsreihe, Ismaning, Germany, November 2022.
- Müller, T.: Ergebnisse aktueller Asteroidenmissionen: Erforschung und Abwehr. Public Talk, Astronomiemuseum Sternwarte Sonneberg, Wissenschaftliche Vortragsreihe, Sonneberg, Germany, November 2022.
- Müller, T.: DARTxDidymoon – Asteroiden: Erforschung und Abwehr. Public Talk, Volkssternwarte München, Wissenschaftliche Vortragsreihe, München, Germany, September 2022.
- Müller, T.: Satellitenmissionen zu Asteroiden: Von der Erforschung zur Asteroidenabwehr. Public Talk, Volkshochschule München Nord, Wissenschaftliche Vortragsreihe, Garching, Germany, April 2022.
- Müller-Seidlitz, J.: Athena WFI. Invited Talk, MPG HLL: Technology and Project Review, Kreuth, Germany, December 2022.
- Paschmann, G.: Results of the Electron Drift Instrument on Cluster. Invited Talk, Cluster 22nd Anniversary Symposium, Darmstadt, Germany, November 2022.
- Pezzotta, A.: KP1: Real-space galaxy power spectrum. Contributed Talk, Euclid galaxy clustering joint WP:NL/WP:HOS meeting, Trieste, Italy, November 2022.
- Pezzotta, A.: COMET: a fast and accurate emulator for 2pt clustering statistics. Contributed Talk, DESI collaboration meeting, Cancún, Mexico, December 2022.
- Pezzotta, A.: Evolution Mapping: understanding the information content of anisotropic clustering measurements. Contributed Talk, Mini Ringberg, Garching bei München, Germany, May 2022.
- Pineda, J. E.: Using Interferometry to Test Our Star-Formation Paradigm. Colloquium, Joint ALMA Observatory (JAO) Colloquium, Santiago, Chile, April 2022.
- Pineda, J.E.: Using Interferometry to Test Our Star-Formation Paradigm. Colloquium, Radio Division seminar, Cambridge, MA, USA, May 2022.
- Predehl, P.: The X-ray Telescope eROSITA on SRG. Invited Talk, SPIE Astronomical Telescopes + Instrumentation 2022, Montreal, Canada, July 2022.
- Predehl, P.: The X-ray Telescope eROSITA on SRG. Invited Talk, Conference in Celebration of Remo Ruffini's 80th Birthday, Nice, France, May 2022.
- Price, S. H.: Galaxy structures through cosmic time. Colloquium, Penn State University, Department of Astronomy and Astrophysics, Pittsburgh, U.S.A., October 2022.
- Price, S. H.: Deep resolved studies of galaxy kinematics and structures at the peak of cosmic star formation. Invited Talk, Conference "In Situ View of Galaxy Formation 2", Ringberg, Germany, July 2022.
- Price, S. H.: Constraining the lead-up to quenching: resulting structures, dynamics, feedback, and mass transport of massive SFGs at $z \sim 1-3$. Contributed Talk, Conference "Epoch of Galaxy Quenching 2022", Cambridge, U.K., September 2022.
- Pulsoni, Claudia: Compact progenitors in simulated ETG cores. Invited Talk, COSMIC NUGGETS – A FEAST OF COMPACT AND MASSIVE GALAXIES ACROSS THE UNIVERSE, Sesto, Italy, March 2022.

- Pulsoni, C.: The stellar halos of ETGs in the IllustrisTNG simulations. Invited Talk, VEGAS Collaboration meeting, Napoli, Italy, July 2022.
- Pulsoni, C.: The stellar halos of ETGs in the IllustrisTNG simulations. Contributed Talk, In Situ View of Galaxy Formation 2, Ringberg, Germany, July 2022.
- Rab, Ch.: Observing the gas disk around the young planet-mass companion CT Cha b with JWST and ALMA. Contributed Talk, COSPAR 2022, Athens, Greece, July 2022.
- Rab, Ch.: Constraining Coronal Mass Ejection and the Stellar Energetic Particle Fluxes from Young Stars During the Period of Planet Formation. Contributed Talk, COSPAR 2022, Athens, Greece, July 2022.
- Rab, Ch.: Constraining the stellar energetic particle flux of T Tauri stars. Contributed Talk, Cosmic Rays II, Florence, Italy, November 2022.
- Rab, Ch.: Protoplanetary/planet-forming disks - The power of spectral line observations. Invited Talk, Ernst Dorfi Summer School, Vienna, Austria, September 2022.
- Ramos-Ceja, M.: Mapping large scale structures at high energies with SRG/eROSITA. Colloquium, Physics colloquium at University of Hull, Online, UK, February 2022.
- Ramos-Ceja, M.: Mapeo de estructuras a gran escala en altas energías con SRG/eROSITA (Spanish). Colloquium, Coloquio de Investigación del Instituto de Astronomía-UNAM, Online, Mexico, March 2022.
- Ramos-Ceja, M.: X-ray properties of HSC weak lensing peaks in the eFEDS footprint. Contributed Talk, Galaxy Clusters 2022: Challenging Our Cosmological Perspectives, Online, U.S.A., April 2022.
- Ramos-Ceja, M.: High-redshift galaxy groups as seen by ATHENA/WFI. Contributed Talk, The Physical Properties of the Groups of Galaxies, Bertinoro, Italy, July 2022.
- Ramos-Ceja, M.: Mapeo de estructuras a gran escala en altas energías con SRG/eROSITA (Spanish). Colloquium, Coloquio Marcos Moshinsky, Leon, Mexico, November 2022.
- Ramos-Ceja, M.: El Universo visto en rayos X. Public Talk, Tecnológico Superior de Apatzcingan, Apatzcingan, Mexico, November 2022.
- Rau, A.: Transients associated to nuclei of galaxies not showing recent activity (as far as we have observational evidence). Contributed Talk, eROSITA_DE Consortium Meeting, remote, remote, January 2022.
- Rau, A.: WFI Science Team. Contributed Talk, Athena/WFI Consortium Meeting, remote, remote, May 2022.
- Rau, A.: WFI Update. Contributed Talk, Athena/WX-IFU Consortium Meeting, remote, remote, November 2022.
- Rau, A.: WFI Science Team. Contributed Talk, Athena/WX-IFU Consortium Meeting #15, Garching, Germany, October 2022.
- Redaelli, E.: The hunt for high-mass prestellar cores. Contributed Talk, MAYA: Meeting of ALMA Young Astronomers, Online, Germany, March 2022.
- Redaelli, E.: The cosmic-ray ionisation rate in the prestellar core L1544. Contributed Talk, Cosmic Rays 2, Florence, Italy, November 2022.
- Redaelli, E.: The hunt for high-mass prestellar cores. Contributed Talk, EAS - European Astronomical Society Meeting, Valencia, Spain, June 2022.
- Redaelli, E.: Molecules as probes of the star-formation process. Colloquium, Santiago de Chile, Chile, October 2022.
- Redaelli, E.: Molecules as probes of the star-formation process. Colloquium, Santiago de Chile, Chile, October 2022.
- Redaelli, E.: Molecules as probes of the star-formation process. Colloquium, Concepción, Chile, September 2022.
- Rukdee, S.: Unveiling Oxygen on Earth-like planets with a Fabry Perot based Instrument. Contributed Talk, Thinkshop 2022: High-resolution spectroscopy for exoplanet atmospheres and biomarkers, Potsdam, Germany, September 2022.
- Rukdee, S.: Calibration of Einstein Probe FXT - QM and FM at the PANTER X-ray test facility. Contributed Talk, International Conference on Space Optics, Dubrovnik, Croatia, October 2022.
- Rukdee, S.: The X-ray testing of Einstein Probe WXT Qualification Model at PANTER. Contributed Talk, International Conference on Space Optics, Dubrovnik, Croatia, October 2022.
- Salvato, M.: The first x00k AGN detected by eROSITA. Contributed Talk, COSPAR 2022, Athens, Greece, July 2022.
- Salvato, M.: Identifying correct counterparts to high-energy sources by "multiwavelength educated guesses" imbibed in Bayesian statistic environment. Invited Talk, PHYSTAT-Gamma, Virtual, Virtual, September 2022.
- Salvato, M.: ML applied to Identification/characterisation of X-ray sources and open problems. Invited Talk, Machine Learning at GGI (Galileo, Galilei Institute), Florence, Italy, September 2022.
- Salvato, M.: Active Galactic Nuclei as seen from the 7 X-ray eyes of eROSITA. Colloquium, Instituto de Astrofísica de Andalucía (IAA) in Granada, Granada, Spain, January 2022.
- Salvato, M.: eROSITA and its contribution to AGN studies. Colloquium, University of Illinois, Illinois, (USA), February 2022.
- Salvato, M.: MPE photometric redshifts for LSST detected AGN. Invited Talk, LSST-AGN meeting, Virtual, Virtual, July 2022.
- Salvato, M.: eROSITA insights on the hot and energetic Universe. Invited Talk, AG 2022, Bremen, Germany, September 2022.
- Salvato, M.: Research in everyday life. Public Talk, Elementary School In Carpanedo (Padova), Padova, Italy, May 2022.

- Salvato, M.: eROSITA insights on the hot and energetic Universe and Synergies with Euclid. Invited Talk, ESA-ESO Euclid workshop on Galaxy evolution, Madrid, Spain, October 2022.
- Sanders, J.: Tools for the analysis of X-ray extended X-ray sources. Invited Talk, AHEAD 2020: Tools for advanced High-Energy Astrophysics data analysis, Online, February 2022.
- Sanders, J.: eRODat: eROSITA-DE DR1 Data Archive Website. Invited Talk, German eROSITA Consortium meeting, Bamberg, Germany, February 2022.
- Semenaite, A: Assessing consistency in physical parameter space with the full shape of anisotropic clustering measurement. Invited Talk, CosmoVerse seminar, online, November 2022.
- Semenaite, A: Cosmological implications of the full shape of anisotropic clustering measurements in BOSS and eBOSS. Invited Talk, ETH Zurich, CosmoClub, Zurich, Switzerland, November 2022.
- Semenaite, A: Constraining beyond- Λ CDM models with full shape clustering analysis of BOSS and eBOSS. Invited Talk, ICE-CSIC Journal Club, online, November 2022.
- Semenaite, A: Constraining beyond- Λ CDM models with full shape clustering analysis of BOSS and eBOSS. Contributed Talk, Essential Cosmology for the Next Generation, Playa del Carmen, Mexico, December 2022.
- Semenaite, A: Constraining beyond- Λ CDM models with full shape clustering analysis of BOSS and eBOSS. Contributed Talk, Dark Energy Connector Day, Garching bei München, Germany, November 2022.
- Semenaite, A: Cosmological implications of the full shape of anisotropic clustering measurements in BOSS and eBOSS. Contributed Talk, Cosmology from Home, online, July 2022.
- Semenaite, A: Cosmological implications of the full shape of anisotropic clustering measurements in BOSS and eBOSS. Contributed Talk, Rencontres de Moriond, La Thuile, Italy, January 2022.
- Seppi, R.: Detecting clusters and AGN in an eROSITA all-sky survey digital twin. Contributed Talk, MIAPbP Advances in Cosmology through Numerical Simulations, Garching, Germany, May 2022.
- Seppi, R.: Detecting clusters and AGN in an eROSITA all-sky survey digital twin. Contributed Talk, Astronomische Gesellschaft Bremen, Bremen, Germany, September 2022.
- Shangguan, J.: Spatially resolving the inner parsec of AGN with VLTI/GRAVITY. Contributed Talk, Sharpest Eyes on the Sky 2022, Exeter, United Kingdom, April 2022.
- Shangguan, J.: Spatially resolving the inner parsec of AGN with VLTI/GRAVITY. Contributed Talk, EAS 2022, session SS12c: The inner parsec of AGN: accretion, winds & clouds, Valencia, Spain, June 2022.
- Shangguan, J.: Near-infrared Interferometry Science with VLTI/GRAVITY. Colloquium, Kavli Institute for Astronomy and Astrophysics at Peking University, Beijing, China, November 2022.
- Shimizu, T.: Resolving the Sub-parsec Structure of AGN with VLTI/GRAVITY. Colloquium, IPAG/IRAM, Grenoble, France, March 2022.
- Shimizu, T.: Measuring the growth of supermassive black holes from $z=0-2$ with GRAVITY(+). Invited Talk, MPE Fachbeirat 2022, Munich, Germany, June 2022.
- Shimizu, T.: Imaging and Resolving the Central Parsec: A Revolution from NIR-MIR Interferometry. Invited Talk, Torus 2022 Workshop, Leiden, Netherlands, December 2022.
- Shimizu, T.: Measuring the growth of supermassive black holes from $z=0-2$ with GRAVITY(+). Invited Talk, Genzel @ 70, Schloss Rinberg, Germany, June 2022.
- Shimizu, T.: Resolving the BLR in AGN with GRAVITY/GRAVITY(+). Invited Talk, Observing the Universe in Motion: 5 Years of GRAVITY, Schloss Ringberg, Germany, October 2022.
- Shimizu, T.: Resolving the sub-pc structure of AGN with GRAVITY/GRAVITY+. Contributed Talk, Quasars and Galaxies through Cosmic Time, online, January 2022.
- Sipilä, O.: Revised Models for Cosmic Ray Induced Desorption in Dense Clouds. Invited Talk, Cosmic Rays 2: The Salt of the Star Formation Recipe, Florence, Italy, November 2022.
- Spezzano, S.: Nitrogen fractionation traces isotope selective photodissociation in a pre-stellar core. Contributed Talk, From Clouds to Planets II, Berlin, Germany, October 2022.
- Spezzano, S.: High-resolution molecular spectroscopy in the CAS Laboratories. Invited Talk, IAU General Assembly, Busan, South Korea, August 2022.
- Spezzano, S.: Nitrogen Fractionation traces isotope selective photodissociation in a pre-stellar core. Colloquium, EAS Annual Meeting, Valencia, Spain, July 2022.
- Spezzano, S.: Dissecting the Chemical and Physical Structure of pre-stellar cores. Colloquium, SFB Institute Colloquium, Cologne, Germany, May 2022.
- Spezzano, S.: Dissecting the Chemical and Physical Structure of pre-stellar cores. Colloquium, Institute Colloquium, Paris, France, November 2022.
- Stieglitz, V.: Characterisation of lobster eye optics and investigation of alternative PSF bases. Contributed Talk, International Workshop on Astronomical X-ray Optics, Prague, Czech Republic, June 2022.
- Sturm, E.: Supermassive black hole mass measurements from interferometric spectro-astrometry and reverberation mapping. Invited Talk, IAU General Assembly / Division D workshop, Busan, Republic of Korea, August 2022.
- Sturm, E.: MICADO. Invited Talk, Workshop in honor of Reinhard Genzel's 70th birthday, Ringberg Castle, Germany, June 2022.
- Sturm, E.: The Universe and I - Musings about the useful-

ness of astronomy for humankind. Contributed Talk, IR group seminar, Garching, Germany, November 2022.

Sánchez, A.: Evolution mapping: a new approach to describe non-linear matter clustering. Colloquium, Astronomical Observatory of Trieste, Trieste, Italy, January 2022.

Sánchez, A.: Evolution mapping: a new approach to describe non-linear matter clustering. Colloquium, Università degli Studi di Milano, Milan, Italy, February 2022.

Sánchez, A.: Construction of the cosmological covariance matrices for galaxy clustering 2pt statistics. Contributed Talk, Euclid Consortium meeting 2022, Oslo, Norway, April 2022.

Sánchez, A.: Evolution mapping: a new approach to describe non-linear matter clustering. Contributed Talk, Advances in Cosmology through Numerical Simulations, Garching, Germany, May 2022.

Sánchez, A.: Genuine precision cosmology from the large-scale structure of the Universe. Colloquium, Institute for Fundamental Physics of the Universe, Trieste, Italy, September 2022.

Sánchez, A.: Genuine precision cosmology from the large-scale structure of the Universe. Colloquium, Astronomical Observatory of Cordoba, Cordoba, Argentina, December 2022.

Tacconi, L. J.: The Evolution of the Star Forming Interstellar Medium Across Cosmic Time. Colloquium, Durham (remote), United Kingdom, March 2022.

Tacconi, L. J.: The Evolution of Cold Gas across Cosmic Time: the PHIBSS Large Program and a Forward Look to NOEMA3D. Invited Talk, IRAM Conference on Multi-line Diagnostics of the ISM, Nice, France, April 2022.

Tacconi, L. J.: The Evolution of the Cold, Star-forming ISM in Galaxies over Cosmic Time. Invited Talk, From Stars to Galaxies II, Gothenburg, Sweden, June 2022.

Tacconi, L. J.: The Cosmic Evolution of Gas and Star Formation. Invited Talk, The Cosmic Evolution Ringberg Symposium in honor of Reinhard Genzel's 70th Birthday, Schloss Ringberg, Germany, June 2022.

Tacconi, L. J.: The Evolution of the Cold, Star-forming ISM in Galaxies over Cosmic Time. Invited Talk, In Situ View of Galaxy Formation II, Schloss Ringberg, Germany, July 2022.

Tacconi, L. J.: The Evolution of the Cold, Star-forming ISM in Galaxies over Cosmic Time. Invited Talk, Santa Cruz Hi-Pacc Galaxy Formation Workshop, Santa Cruz, California, USA, August 2022.

Tacconi, L. J.: The Evolution of the Cold, Star-forming ISM in Galaxies. Invited Talk, Alvio@80 2022 conference in honor of Alvio Renzini, Chania (remote), Greece, September 2022.

Tacconi, L. J.: Uniting European Astronomy. Invited Talk, ESO 60th Anniversary Celebration Day in the Netherlands, Leiden, The Netherlands, September 2022.

Tacconi, L. J.: Watching Galaxies Grow. Public Talk, Bergamo Scienza, Bergamo (remote), Italy, October 2022.

Tacconi, L. J.: The ELT Programme. Invited Talk, ESO 60th Anniversary Celebration Day in France, Paris, France, November 2022.

Tacconi, L. J.: A (Sub)mm View of Galaxy Formation and Evolution. Invited Talk, WE-Heraeus JWST Symposium, Berlin, Germany, November 2022.

Tacconi, L. J.: Exploring the Universe with ESO's Super Telescopes - Panel Discussion. Public Talk, Allison Leveck Lecture 2022, Sydney, Australia, December 2022.

Valdivia Mena, Maria: Rivers in the sky: Streamers discovered towards two embedded protostars in Perseus. Contributed Talk, European Astronomical Society Annual Meeting 2022, Valencia, Spain, June 2022.

Valdivia Mena, Maria: Rivers in the sky: streamers discovered towards two Class I sources in Perseus. Contributed Talk, From Clouds to Planets II: The Astrochemical Link, Berlin, Germany, August 2022.

Valdivia Mena, Maria: Rivers in the sky: streamers discovered towards two Class I sources in Perseus. Colloquium, Star and Planet Formation Seminar, Garching, Germany, November 2022.

Valdivia Mena, Maria: Rivers in the sky: streamers discovered towards two young embedded sources in Perseus. Colloquium, IRAM-Wisc-CAS Seminar, Virtual, Virtual, December 2022.

Valdivia Mena, Maria: Rivers in the sky: streamers discovered towards two young embedded sources in Perseus. Colloquium, Tuesday UVa / NRAO Astronomy (TUNA) Lunch Talk, Charlottesville, USA, December 2022.

Valdivia Mena, Maria: How to feed baby stars. Public Talk, Soapbox Science Munich, Munich, Germany, July 2022.

Valdivia Mena, Maria: Rivers in the sky: streamers discovered towards two Class I sources in Perseus. Contributed Talk, Meeting of ALMA Young Astronomers, Virtual, Virtual, March 2022.

Waddell, S.: Soft excesses as seen by eROSITA. Contributed Talk, Black hole accretion under the X-ray microscope, Madrid, Spain, June 2022.

Waddell, S.: Soft excesses as seen by eROSITA. Contributed Talk, COSPAR 2022, Athens, Greece, July 2022.

Werner, Werner: Neue Großteleskope für die Astrophysik. Public Talk, VHS Ottobrunn Studium Generale, Ottobrunn, Deutschland, March 2022.

Werner, Werner: 2-eROSITA, ein deutsches Röntgenteleskop für die Erforschung des Universums. Public Talk, VHS Ottobrunn Studium Generale, Ottobrunn, Deutschland, March 2022.

Widmann, F.: GRAVITY-Faint: reducing noise sources in GRAVITY+. Contributed Talk, SPIE Astronomical Telescopes & Instrumentation 2022, Montreal, Canada, July 2022.

- Widmann, F.: The Galactic Center with GRAVITY. Contributed Talk, Sharpest Eye in the Sky, Exeter, UK, April 2022.
- Wolf, J.: Finding high-redshift quasars with eROSITA. Invited Talk, COSPAR-22, Athens, Greece, July 2022.
- Wolf, J.: The detection of $z > 5.5$ quasars with eROSITA. Contributed Talk, EAS, Valencia, Spain, June 2022.
- Yeung, M: The Diffuse X-ray Foreground Revealed by the Darkest Shadows. Contributed Talk, Annual Meeting of the Astronomische Gesellschaft 2022, Bremen, Germany, September 2022.
- Zhang, Yi: Study the hot circum-galactic medium of galaxies with eRASS1 data. Contributed Talk, Multi-phase, Multi-temperature and Complex: how AGN feedback shapes the nature of the circum-galactic and halo gas in galaxy groups, Garching, Germany, December 2022.
- van Dishoeck, E.F.: Building stars, planets and the ingredients for life in space. Invited Talk, Niels Bohr Centennial Symposium, Copenhagen, Denmark, March 2022.
- van Dishoeck, E.F.: Building stars, planets and the ingredients for life in space. Colloquium, Alikhanian Yerevan Institute of Physics, Yerevan, Armenia, September 2022.
- van Dishoeck, E.F.: Building stars, planets and the ingredients for life in space. Public Talk, Science and Cocktails, Copenhagen, Denmark, October 2022.
- van Dishoeck, E.F.: Building stars, planets and the ingredients for life in space. Public Talk, Niels Bohr prize public lecture, Copenhagen, Denmark, October 2022.
- van Dishoeck, E.F.: Building stars, planets and the ingredients for life in space. Public Talk, Frederiksborg Gymnasium, Copenhagen, Denmark, October 2022.
- van Dishoeck, E.F.: Building stars, planets and the ingredients for life in space. Public Talk, Trinity College, Cambridge, UK, November 2022.
- van Dishoeck, E.F.: Building stars, planets and the ingredients for life in space. Invited Talk, Christmas lecture FWN, Leuven, Belgium, December 2022.
- van Dishoeck, E.F.: Building planets: what sets their composition?. Invited Talk, PEPSci exoplanet meeting (virtual), Leiden, Netherlands, February 2022.
- van Dishoeck, E.F.: Building planets: what sets their composition?. Invited Talk, EAS Fritz Zwicky Prize lecture, Valencia, Spain, June 2022.
- van Dishoeck, E.F.: Building planets: what sets their composition?. Colloquium, Institute of Astronomy LCLU seminar, Cambridge, UK, November 2022.
- van Dishoeck, E.F.: Zooming into the planet forming zones of disks. Colloquium, Astronomical Institute, Vienna, Austria, February 2022.
- van Dishoeck, E.F.: Astrochemical trail from clouds to disks and planets. Colloquium, University of Virginia/NRAO, Charlottesville, USA, May 2022.
- van Dishoeck, E.F.: Astrochemical trail from clouds to disks and planets. Colloquium, JEDI-INAF colloquium (virtual), Rome, Italy, June 2022.
- van Dishoeck, E.F.: Molecular processes between the stars. Invited Talk, MOLEC 2022, Hamburg, Germany, August 2022.
- van Dishoeck, E.F.: Molecular processes relevant for astrophysics: theoretical studies. Invited Talk, IAU Symposium 371, Busan, Republic of Korea, August 2022.
- van Dishoeck, E.F.: Tracing the journey of molecules in space with IRMMW-THz spectroscopy. Invited Talk, IRMMW-THz symposium, Delft, Netherlands, August 2022.
- van Dishoeck, E.F.: Where does Earth's water come from?. Public Talk, VISESS water forum, Vienna, Austria, March 2022.
- van Dishoeck, E.F.: Astrochemistry: from the biggest to the smallest scales. Invited Talk, Genzefest, Ringberg, Germany, July 2022.
- van Dishoeck, E.F.: The inner regions of protoplanetary disks. Invited Talk, Inside 2022 inner disks conference, Ringberg, Germany, September 2022.
- van Dishoeck, E.F.: First JWST results on disks from the MINDS program. Contributed Talk, Niels Bohr Gold medal Astrochemistry symposium, Copenhagen, Denmark, October 2022.
- van Dishoeck, E.F.: Probing the embedded phase of star formation with JWST spectroscopy. Invited Talk, IceAge meeting, Leiden, Netherlands, November 2022.
- van Dishoeck, E.F.: JWST: a new journey of discovery of the cosmos. Invited Talk, EIROFORUM meeting, Heidelberg, Germany, April 2022.
- van Dishoeck, E.F.: JWST: a new journey of discovery of the cosmos. Public Talk, CERN Beamline for Schools (virtual), Geneva, Switzerland, September 2022.
- van Dishoeck, E.F.: JWST: a new journey of discovery of the cosmos. Invited Talk, European Science Open Forum, Leiden, Netherlands, July 2022.
- van Dishoeck, E.F.: JWST: a new journey of discovery of the cosmos. Colloquium, Byurakan Observatory, Yerevan, Armenia, September 2022.
- van Dishoeck, E.F.: JWST: a new journey of discovery of the cosmos. Public Talk, Starmus Festival opening ceremony, Yerevan, Armenia, September 2022.
- van Dishoeck, E.F.: A rollercoaster triennium: some reflections. Invited Talk, IAU General Assembly opening ceremony, Busan, Republic of Korea, August 2022.
- van Dishoeck, E.F.: Women in astronomy and the IAU. Invited Talk, IAU GA WiA WG4 meeting, Busan, Republic of Korea, August 2022.
- van Dishoeck, E.F.: Synergies and challenges of ground and space astronomy. Invited Talk, IAU GA Global coordination WG meeting, Busan, R, August 2022.

von Fellenberg, S.: Young Stars in the Galactic Center. Colloquium, Hypatia Colloquium 2022, online, May 2022.

von Kienlin, A.: Fermi GBM - 14 years in operation. Contributed Talk, Tenth International Fermi Symposium, Johannesburg, South Africa, October 2022.

von Kienlin, A.: eROSITA on SRG. Contributed Talk, Tenth International Fermi Symposium, Johannesburg, South Africa, October 2022.

PhD Theses

Choudhury, S.: Structure and dynamics of low-mass star-forming cores. Ludwig Maximilian University, 2022.

Fahrenschon, V.: Stabilization of a high-resolution spectrograph and performance verification by measurements of the Rossiter-McLaughlin effect. LMU, 2022.

Müller, B.: Infrared spectroscopy of water-bearing interstellar ice analogues - from molecular oxygen to the structure of ice mantles. Ludwig Maximilian University of Munich, 2022.

de Nicola, S.: Intrinsic shapes of massive elliptical galaxies. MPE/LMU, 2022.

Master Theses

Almanstoetter, P.: Investigation of the dark matter distribution in barred Milky Way-like galaxies in the Illustris TNG50 simulation. Univ. Augsburg, 2022.

Balzer, F.: Quasar selection for 4Hi-Q using photometric redshifts. University Hamburg, 2022.

Baron Perez, Nicolas: Mass Prediction of eROSITA Galaxy Clusters Using Machine Learning. MPE, LMU, 2022.

Gonzales, Justo: Stacking the Spectra of eROSITA Galaxy Cluster Data for Searches of the 3.5keV line: Dark Matter Decay or Charge Exchange?. MPE, LMU, 2022.

Grünwald, G.: Spectral Analysis of Narrow-Line Seyfert 1 Galaxies in the First eROSITA All-Sky Survey Scan. MPE, 2022.

Jouili, A.: Dark matter in dwarf elliptical galaxies. TU, 2022.

Lopez, N.: Robust Estimation of Host Stellar Masses for Active Galactic Nuclei. MPE, 2022.

Makarov, Sergei: Finding Superclusters in the eRASS1. MPE, LMU, 2022.

Mang, M.: Interferometrische Bildgebung und Mosaik des Galaktischen Zentrums mit GRAVITY / Interferometric Imaging and Mosaicing of the Galactic Center with GRAVITY. Max-Planck-Institut für extraterrestrische Physik, 2022.

Shankar, S.: Photometric redshift estimation for AGN detected by eROSITA. Tübingen University, 2022.

Bachelor Theses

Becher, D.: The formation and evolution of early-type galaxies - Age determination of early-type galaxies as a function of redshift. LMU, 2022.

Huber, M.: Evolution of Early-Type galaxies - The Fundamental Plane. LMU, 2022.

Rijal, S.: The radius gap - Why there are (almost) no planets with radii between 1.5-2 earth radii. LMU, 2022.

Sabovic, A.: Measurement of spin-orbit alignments with the help of planetary transits. LMU, 2022.

Stanka, S.: Transit time variations - A powerful method for the determination and characterization of exoplanet systems and their properties. LMU, 2022.

Thurner, S.: Evolution of spiral galaxies - The Tully-Fisher relation. LMU, 2022.

Collaborations / Transfer of Know-How

Scientific Collaborations by Country



Austria

Institut für Ionenphysik und Angewandte Physik - Molekulare Systeme; Universität Innsbruck: CAS-Laboratory.
 Institut für Weltraumforschung, Graz: ATHENA WFI.
 Universität und TU Wien: MICADO; ATHENA.
 Universität Innsbruck: MICADO.
 Universität Linz: MICADO.
 RICAM Linz: MICADO.
 Institute für Astronomy, Universität Wien: EUCLID.

Belgium

Katholieke Universiteit Leuven, Leuven: GRAVITY+.
 Department of Physics and Astronomy, Ghent University: EUCLID.

Brazil

Instituto Federal de Educação, Ciência e Tecnologia do Rio de Janeiro, Nilópolis, Brazil: CAS-Laboratory.
 IAG/Universidade de Sao Paulo: PFS.
 Laboratório Nacional de Astrofísica: PFS.
 Universidade Federal de Minas Gerais, Belo Horizonte: CAS-Observations.

Canada

University of Toronto, Toronto: CAS-Theory.
 Department of Physics and Astronomy, University of Waterloo: EUCLID:

Chile

ESO, Joint ALMA Observatory, Santiago de Chile: CAS-Observations; SBNF.
 NAQAF, Nucleo de astroquímica y astrofísica, Universidad Autónoma de Chile: CAS-Laboratory.
 Universidad de Chile, Santiago de Chile: CAS-Observations.

Universidad de Concepcion: Max-Planck-Partnergruppe Baryonischer Zyklus in Galaxien; Röntgen-Doppelsternsysteme; CAS-Observations; Galaxienentwicklung.
 Universidad Catolica Santiago, Santiago de Chile: Röntgen-Doppelsternsysteme; Max-Planck-Partnergruppe Galaktisches Zentrum.
 Universidad Diego Portales, Santiago de Chile: CAS-Observations.

China

Donghua University, Shanghai: CAS-Theory
 Institute for High-Energy Physics (IHEP), Peking: Gammaquellen mit COMPTEL und INTEGRAL; Einstein Probe; eXTP.
 Nanjing University, Nanjing: CAS-Observations.
 National Astronomical Observatories of China, Peking: PFS; CAS-Observations, CAS-Theory.
 Kavli Institute for Astronomy and Astrophysics at Peking University, Peking: PFS.
 Shanghai Jiao Tong University, Shanghai: PFS.
 The University of Science and Technology of China, PFS.
 Tsinghua University, Peking: PFS.
 University of Hongkong, Hongkong: Strahlungsmechanismen von Pulsaren im Röntgen- und Gammabereich.
 University of Science and Technology of China, Hefei: PFS.
 Xiamen University, Xiamen: PFS.
 Xinjiang Astronomical Observatory, Ürümqi: CAS-Theory:

Czech Republic

Charles University, Prague: SBNF; Hayabusa-2.
 Dept. of Surface and Plasma Science, Faculty of Mathematics and Physics, Charles University, Prague: CAS-Laboratory.

Denmark

Dänemarks Technische Universität, Lyngby: ATHENA.
 Niels Bohr Institute, University of Copenhagen: CAS-Theory.
 DTU Space, National Space Institute, Technical University of Denmark: EUCLID.

Finland

University of Helsinki, Helsinki: CAS-Theory; CAS-Observations.
 University of Turku - Finnish Centre for Astronomy with ESO (FINCA), Turku: MICADO.
 University of Helsinki, Department of Physics: EUCLID.

France

Aix-Marseille University, Marseille: CAS-Theory.
 CEA, Saclay: INTEGRAL-Spektrometer SPI; EUCLID; SVOM; ATHENA.
 Centre d'Etude Spatiale des Rayonnements (UPS), Toulouse: INTEGRAL-Spektrometer SPI; CAS-Observations.
 Centre National de la Recherche Scientifique, Paris: INODE.
 European Space Agency (ESA), Paris: EUCLID
 IAP, Paris: Nukleare Astrophysik.
 Institut d'Astrophysique de Paris: EUCLID.
 IPAG, Grenoble: GRAVITY; GRAVITY+; MICADO; CAS-Observations; CAS-Theory.
 IRAM, Grenoble: CAS-Observations.
 IRAM, Saint-Martin-d'Hères: CAS-Observations; Galaxienentstehung.
 Laboratoire d'Astrophysique de Marseille (LAM), Marseille: EUCLID; Gamma-Ray Bursts; PFS; CAS-Observations.
 Laboratoire Univers et Particules de Montpellier, Montpellier: Cosmic-ray propagation in molecular clouds.
 Observatoire astronomique de Strasbourg, Strasbourg, ATHENA.
 Observatoire de la Côte d'Azur Nice (OCA), Nizza: GRAVITY+.
 Observatoire de Paris (GEPI), Paris: MICADO; GRAVITY.
 Observatoire de Paris (LERMA), Paris: CAS-Theory.
 Observatoire de Paris (LESIA), Paris: MICADO; GRAVITY.
 Observatoire de Paris-Meudon, Paris: GRAVITY; GRAVITY+, Galaktisches Zentrum.
 SOLEIL Synchrotron (AILES beamline), Saint-Aubin: CAS-Laboratory.
 Université de Bordeaux, Bordeaux: CAS-Theory.
 Université de Cergy-Pontoise, Cergy Pontoise Cedex: CAS-Observations.
 Université de Franche-Comté (UTINAM), Besançon: MICADO.
 Université de Lyon (CRAL), Lyon: GRAVITY+; CAS-Observations.
 Université de Rennes, Rennes: CAS-Laboratory; CAS-Observations.
 Université de Toulouse, Toulouse: CAS-Observations; CAS-Laboratory.
 Université Paris Diderot, Paris: CAS-Observations.
 Université Paris-Saclay, Saclay: CAS-Laboratory; CAS-Observations.

Germany

Astrophysikalisches Institut Potsdam, Potsdam: eROSITA; XMMNewton; OPTIMA; ARGOS; HETDEX; 4MOST.
 Deutsches Elektronen-Synchrotron, Hamburg: CAS-Laboratory.
 European Southern Observatory (ESO), Garching: GRAVITY; GRAVITY+; Galaxienentstehung; Nukleare Astrophysik; MICADO; ERIS; Black Hole Cam; Infrared Dark Clouds; CAS-Observations; CAS-Theory.
 Fraunhofer Institut für Integrierte Schaltungen, Erlangen: Mikroelektronikentwicklungen; ATHENA. Fraunhofer Institut für Computer Graphics Research IGD, Darmstadt: IODE.
 Heinrich-Heine-Universität, Düsseldorf: Soft Matter Physics.
 Institut für Astronomie und Astrophysik Tübingen (IAAT), Tübingen: XMM-Newton; eROSITA; ATHENA; SBO-DS.
 Institut für Astrophysik Göttingen, Göttingen: MICADO.
 Institut für Festkörperphysik und Werkstoff-Forschung, Dresden: Entwicklung weichmagnetischer Werkstoffe.
 Institut für Materialphysik im Weltraum, Köln: Glasübergänge.
 Landessternwarte Heidelberg-Königstuhl, Heidelberg: Galaxienentstehung; ARGOS.
 Laser Zentrum Hannover, Hannover: Dichroics for ARGOS.
 Ludwig-Maximilians-Universität, München: MICADO; HETDEX; eROSITA; CAS-Theory.
 Max-Planck-Institut für Astronomie, Heidelberg: GRAVITY; GRAVITY+; SDSS; ARGOS; MICADO; EUCLID; CAS-Theory.
 Max-Planck-Institut für Astrophysik, Garching: SDSS; OPTIMA; eROSITA; PFS.
 Max-Planck-Institut für Gravitationsphysik, Potsdam: Black Hole Cam.
 Max-Planck-Institut für Physik, Werner Heisenberg Institut, München: MPG Halbleiterlabor; ATHENA. Max-Planck-Institut für Radioastronomie, Bonn: ARGOS; Black Hole Cam; CAS-Observations; CAS-Theory.
 Physikalisch-Technische Bundesanstalt Berlin, Berlin: eROSITA.
 Technische Universität Berlin, Berlin: Interstellares Medium.
 Technische Universität Darmstadt, Darmstadt: CAST.
 Technische Universität München, München: Nukleare Astrophysik; ESBO-DS.
 Thüringer Landessternwarte Tautenburg, Tautenburg: GROND; Gamma-Ray Bursts.
 Universität Bonn, Bonn: ATHENA; eROSITA; EUCLID; CAS-Observations.
 Universität der Bundeswehr, München: SBNAF.
 Universität Düsseldorf, Düsseldorf: ERC Advanced Grant; CAS-Theory.
 Universität Erlangen (ECAP), Erlangen: eROSITA; ATHENA.
 Universität Hamburg, Hamburg: eROSITA; OPTIMA (Flarestars).
 Universität Heidelberg, Heidelberg: ATHENA; XFEL; CAS-Theory.
 Universität Jena, Jena: Isolierte Neutronensterne; Nukleare Astrophysik.
 Universität Kassel, Kassel: CAS-Observations, CAS-Laboratory.

Universität Köln, Köln: Galaktisches Zentrum; GRAVITY; GRAVITY+; CAS-Observations; CAS-Theory; CAS-Laboratory.

Universität Mannheim, Mannheim: ATHENA; XFEL.

Universität Stuttgart, Stuttgart: ESBO-DS.

Universität Würzburg, Würzburg: AGADE.

Greece

ATHENA RC, Research and Innovation Centre in Information, Communication and Knowledge Technologies, Athen: INODE.

Infil Technologies, Athen: INODE.

University of Crete and Foundation for Research and Technology Hellas (FORTH), Heraklion: Röntgendoppelsternsysteme; OPTIMA Photometer; Röntgen-AGN.

National Observatory of Athens, Athen: ATHENA; eROSLTA.

Hungary

Konkoly Observatory of the Hungarian Academy of Sciences, Budapest: SBNAF; CAS-Observations; CAS-Theory.

Institute for Nuclear Research (ATOMKI), Debrecen: CAS-Laboratory.

India

Tata Institute of Fundamental Research, Mumbai: CAS-Observations.

Iraq

University of AL-Muthanna, AL-Muthanna: CAS-Observations.

Ireland

National University of Ireland, Galway: High Time Resolution Astronomy; CAS-Theory.

University College Dublin: Fermi/GBM.

Israel

School of Physics and Astronomy, Wise Observatory, Tel Aviv: Aktive Galaxien; Interstellares Medium; Galaxienentwicklung.

Italy

Free University of Bozen-Bolzano, Bozen: INODE.

IFCAI-CNR Palermo, Palermo: XMM-Newton Beobachtungen von Neutronensternen und Pulsaren.

INAF (Istituto Nazionale di Astrofisica), Rom: ATHENA; EUCLID.

INAF Arcetri, Florenz: ARGOS; LBT; ERIS; CAS-Observations; CAS-Theory.

INAF Padua, Padua: LBT; MICADO; ERIS.

INAF Roma, Rom: LBT; Nukleare Astrophysik; EUCLID.

INAF Teramo, Teramo: ERIS.

INAF Trieste, Triest: Gamma-Ray Bursts; Fermi/LAT.

INFN Frascati, Frascati: SIDDHARTA.

Osservatorio Astronomico di Brera, Brera: Himmelsdurchmusterung Galaxienhaufen.

Osservatorio Astrofisico di Catania, Catania: CAS-Theory; CAS-Laboratory.

Scuola Normale Superiore, Pisa: CAS-Observations.

Università degli Studi di Firenze, Florenz: CAS-Observations; CAS-Theory.

Università degli Studi di Milano, Mailand: CAS-Observations.

Università degli Studi di Torino, Turin: CAS-Observations.

Università di Bologna, Bologna: EUCLID; CAS-Theory; CAS-Laboratory; CAS-Observations.

Università di Perugia, Perugia: CAS-Observations.

Japan

Academia Sinica, Nangang: PFS.

Chiba University: EUCLID.

Department of Chemistry, Tokyo University of Science, Japan: CAS-Observations.

Department of Physics, Nihon University, Japan: CAS-Observations.

Department of Materials and Life Sciences, Sophia University, Japan: CAS-Observations.

Kavli Institute for the Physics and Mathematics of the Universe, Kashiwa: PFS.

Kobe University, Kobe: CAS-Theory.

National Astronomical Observatory of Japan, Mitaka/Tokio: CAS-Theory; CAS-Observations; Galaxienentwicklung; PFS.

Institute of Physical and Chemical Research, Saitama: CAS-Observations.

Japan Aerospace Exploration Agency, Sagami-hara, Kagawa: SBNAF.

The Institute of Physical and Chemical Research (RIKEN), Japan: CAS-Observations.

Tokio Institute of Technology (TITECH), Ookayama: ASCA/XMM-Newton Beobachtungen von AGN.

University of Osaka, Osaka: Astro-H.

University of Tokyo, Institutes for Advanced Study (UTIAS), Tokyo: PFS.

University of Tokyo, Tokyo: PFS; CAS-Observations.

Tohoku University, Sendai: Galaxienentwicklung.

Latvia

Ventspils University College, Ventspils: CAS-Theory.

Mexico

Universidad Nacional Autonoma de México, Ensenada: CAS-Observations.

Norway

Institute of Theoretical Astrophysics, University of Oslo: EUCLID.

Poland

Nicolaus Copernicus University, Torun: Pulsars Astronomical Centers; ATHENA.

Space Research Center (CBK), Warschau: ATHENA WFI.

Astronomical Observatory Institute, Poznań: SBNAF.

University Zielona Gora: OPTIMA.

Portugal

CENTRA Lissabon und Porto, Lissabon: GRAVITY; GRAVITY+.

Osservatorio Astronomico de Lisboa, Lissabon: ATHENA.

Universidade de Coimbra, Coimbra: Departamento de Engenharia Química: CAS-Laboratory.

Romania

Institute for Space Science: EUCLID.

Russia

Institute of Astronomy, Moskau: CAS-Theory.
 Lebedev Institute of Physics, Moskau: CAS-Theory.
 Prokhorov General Physics Institute, Moskau: CAS-Laboratory.
 Space Research Institute (IKI) of the Russian Academy of Science, Moskau: eROSITA/Spektrum Röntgen-Gamma.
 Skobeltsyn Institute of Nuclear Physics, Moskau: Nukleare Astrophysik; Gamma-Ray Bursts; AGADE. Ural Federal University, Jekaterinburg: CAS-Theory.

Sweden

Chalmers University of Technology, Onsala Space Observatory, Onsala: CAS-Observations.
 University Lund/Observatory, Lund: OPTIMA.

Switzerland

CERN, Geneva: CAST.
 ETH Zürich, Zürich: ERIS.
 Observatoire de Genève Sauverny, Genf: ISDC/INTEGRAL; Nukleare Astrophysik; EUCLID.
 Swiss Institute of Bioinformatics, Lausanne: INODE.
 Universität Basel, Basel: Nukleare Astrophysik.
 University of Geneva, Genf: ATHENA.
 University of Zurich, Zürich: Infrared Dark Clouds.
 Zürcher Hochschule für Angewandte Wissenschaften, Zürich: INODE.

Spain

CCentro de Investigaciones Energeticas, Medioambientales y Tecnológicas, Madrid: DES.
 Centro de Astrobiología (CSIC/INTA), Madrid: CAS-Laboratory.
 ESAC, Madrid: XMM-Newton Science Operations Center; INTEGRAL Science Operations Center; Herschel; EUCLID; SBNAF.
 Instituto de Astrofísica de Andalucía (IAA), Granada: SBNAF; ESBO-DS.
 Institut d'Estudis Espacials de Catalunya: EUCLID.
 Instituto de Astrofísica de Canarias, La Laguna: SBNAF; EUCLID.
 Instituto de Ciencias del Espacio, Bellaterra: DES.
 Instituto de Ciències de l'Espai, Cerdanyola del Vallès: CAS-Observations.
 Institut de Física d'Altes Energies, Barcelona: DES; EUCLID.
 Javalambre Physics of the Accelerating Universe Astrophysical Survey (J-PAS), Javalambre: eROSITA follow up.
 SIRIS Academic SL, Barcelona: INODE.
 Universitat Autònoma de Barcelona, Bellaterra: CAS-Observations.
 Universidad de Valencia, Department de Astronomia, Valencia: INTEGRAL-Spektrometer SPI.
 Universidad de Zaragoza, Zaragoza: CAST.
 Observatorio Astronómico de Mallorca, Costitx: Novae; Kometen.
 Observatorio Astronómico Nacional, Madrid: CAS-Observations.

South Korea

Seoul National University, Seoul: Hayabusa-2.

Taiwan

Academia Sinica Institute of Astronomy and Astrophysics (ASIAA), Taipei: CAS-Theory; CAS-Observations; PFS.
 National Central University, Chungli; PanSTARRS.

The Netherlands

ESTEC, Noordwijk: XMM-Newton; INTEGRAL; EUCLID; ATHENA; eROSITA.
 JIVE Dwingeloo, Dwingeloo: Black Hole Cam.
 NOVA (Leiden, Groningen, ASTRON/Dwingeloo, Amsterdam): MICADO; ERIS.
 Leiden University, Leiden: CAS-Observations; CAS-Theory; IR/Submm Spectroscopy; EUCLID.
 Radboud University, Nijmegen: Black Hole Cam; CAS Laboratory.
 SRON, Utrecht: Chandra-LETG.
 University of Groningen, Kapteyn Institute, Groningen: Rekonstruktion der Dichteverteilung im Universum; EUCLID; Dynamical-Chemical Models; CAS-Theory; CAS-Observations.

UK

JAstrophysics Research Group University of Surrey: EUCLID.
 John Moores University, Liverpool: Himmelsdurchmusterung Galaxienhaufen; Infrared Dark Clouds; CAS-Observations.
 Open University, Milton Keynes: Kataklysmische Variablen; Novae; ATHENA.
 Queen Mary University of London, London, UK: CAS-Observations; CAS-Theory.
 Rutherford Appleton Laboratory, Council for the Central Laboratory of the Research Councils, Swindon: SIS-Junctions.
 SKA Organisation, Jodrell Bank Observatory, Macclesfield: CAS-Observations.
 United Kingdom Astronomy Technology Centre (UKATC), Edinburgh: EUCLID; ERIS.
 University of Cambridge, Cambridge: DES; CAS-Theory.
 University College London, London: High Energy Pulsars; EUCLID; DES; CAS-Observations.
 University of Edinburgh, Edinburgh: DES.
 University of Leeds, Leeds: CAS-Theory.
 University of Leicester, Leicester: XMM-Newton; ATHENA; Swift; EUCLID.
 University of Nottingham, Nottingham: DES.
 University of Portsmouth, Portsmouth: DES.
 University of Sussex, Brighton: DES.
 University of Southampton, Southampton: GRAVITY+; Magellanic Clouds.

USA

Argonne National Laboratory, Lemont: DES.
 Brookhaven National Laboratory, Upton: strahlenharte JFETELelektronik; strahlenharte Detektoren.
 Benedictine College, Atchison: CAS-Theory.
 California Inst. of Technology, Pasadena: X-ray Survey; PFS.

CfA, Cambridge: ATHENA/WFI; XMM-Newton/Chandra Kalibration.

Clemson University, Clemson: Gamma-Ray Bursts; Nukleare Astrophysik.

Columbia University: PFS.

Department of Astronomy, The University of Texas at Austin, Austin: CAS-Observations.

Department of Astronomy, University of Michigan: CAS-Observations.

Fermilab, Batavia: DES.

Green Bank Observatory, Green Bank: CAS-Observations.

Harvard-Smithsonian Center for Astrophysics, Cambridge: CAS-Observations; CAS-Laboratory; CAS-Theory.

Johns Hopkins University, Baltimore: PFS.

Marshall Space Flight Center, Huntsville: Fermi Gamma-Ray Burst Monitor; XMM-Newton und Chandra, Beobachtungen von Neutronensternen, Pulsaren und Supernova-Überresten.

MIT, Cambridge: ATHENA WFI.

NASA/Ames Research Center, Mofett Field (CA): MHD Shocks; SBNAF.

NASA/Goddard Space Flight Center, Greenbelt (MD): INTEGRAL-Spektrometer SPI; Swift.

NASA/Jet Propulsion Laboratory, Pasadena: EUCLID; PFS; CAS-Observations.

National Radio Astronomy Observatory, Charlottesville: CAS-Theory; CAS-Observations.

National Radio Astronomy Observatory, Socorro, New Mexico: CAS-Observations.

National Science Foundation, Arlington: CAS-Observations.

NOAO, Tucson: DES.

Ohio State University, Columbus: DES; LBT.

Pacific Northwest National Laboratory (PNNL), Richland: CAST.

Pennsylvania State University, State College: HETDEX; Swift; ATHENA, PFS.

Princeton University, Princeton: PFS; CAS-Theory.

Research Corporation, Tucson: LBT.

San Jose State University, San Jose: MHD shocks.

SLAC, Stanford: CAMP; DES; ATHENA.

Smithsonian Astrophysical Observatory, Cambridge: Chandra-LETGS; Röntgendoppelsterne in M31; ATHENA.

Space Telescope Science Institute, Baltimore: Galaxienentstehung; Turbulence; SBNAF.

Stanford University, Stanford: DES; Fermi/LAT; Fermi/GBM.

Texas A & M University, College Station: DES; SBNAF.

Texas State University, San Marcos: HETDEX.

University of Arizona, Tucson: Kosmische Strahlung; Planetenentstehung; LBT; ARGOS; CAS-Observations; CAS-Theory.

University of California, Berkeley: MPG/UCB-Kollaboration; FAST; INTEGRAL-Spektrometer SPI; Superbubbles.

University of California, Santa Cruz: DES.

University of Chicago, Chicago: CAS-Observations; DES.

University of Colorado, Boulder (Co): Superbubbles; CAS-Observations; Galaxienkerne.

University of Connecticut: PFS.

University of Florida, Gainesville: Infrared Dark Clouds.

University of Hawaii, Honolulu, Hawaii: CAS-Theory.

University of Illinois, Urbana-Champaign: DES; PFS.

University of Massachusetts, Amherst: CAS-Observations; PFS.

University of Michigan, Ann Arbor: DES.

University of Mississippi: CAS-Laboratory.

University of Nevada, Las Vegas: CAS-Observations.

University of Pennsylvania, State College: DES.

University of Pittsburgh, Pittsburgh: Galaxienentstehung; PFS.

University of Texas, Austin: Galaxienentstehung; CAS-Theory.

University of Texas Austin, McDonald Observatory: Hobby-Eberly-Telescope, HETDEX.

University of Texas at El Paso, CAS-Observations: CAS-Theory.

University of Texas, San Antonio: SBNAF.

University of Toledo, Toledo: Galaxienentstehung; CAS-Observations.

University of Virginia, Charlottesville: CAS-Theory; CAS-Observations.

University of Wisconsin-Madison, Madison: CAS-Theory.

Yale University, New Haven: CAS-Observations.

Multinational Collaborations - Projects

ARGOS - Laserleitstern für das LBT: Arcetri Observatory, Italy; AIP, LSW Heidelberg, MPIa, MPIfR, Germany; University of Arizona, USA.

ASPI - The International Wave Consortium: CNR-IFSI Frascati, Italy; LPCE/CNRS Orleans, France; Dept. of Automatic Control and Systems University of Sheffield, UK.

ATHENA - Advanced Telescope for High Energy Astrophysics: Dänemarks Technische Universität, Dänemark; Nikolaus Kopernikus Astronomical Center, Polen; Universität Wien, Österreich; IWF, Graz; INAF Italy, Italy; CEA Frankreich, Frankreich; University of Leicester, Open University, UK; Institut für Astronomie und Astrophysik Tübingen, Erlangen Centre for Astroparticle Physics (ECAP), Germany; ESA; NOA, Greece; Universität Geneva, Schweiz; Institute for Astrophysics, Portugal; Stanford University, USA.

BOSS - Baryon Oscillation Spectroscopic Survey: SDSSIV Collaboration.

Chandra: Marshall Space Flight Center Huntsville, Massachusetts Institute of Technology Cambridge, Smithsonian Astrophysical Observatory Cambridge, USA; Space Research Institute Utrecht, The Netherlands; Universität Hamburg, Germany.

COSMOS - Cosmological Evolution Survey: INAF-Osservatorio Astronomico di Bologna, INAF-Osservatorio Astronomico di Roma, INAF-Osservatorio Astrofisico di Arcetri, INAF/IASF-CNR, Sezione di Milano, IRA-INAf, Bologna, Dipartimento di Astronomia, Università Padova, Dipartimento di Fisica, Università degli Studi Roma Tre, Italy; Harvard-Smithsonian Centre for Astrophysics, Cambridge, Dept. of Physics, Carnegie Mellon University, Pittsburg, Institute for Astronomy, University of Hawaii, California Institute of Technology, Pasadena, Dept. of Astronomy, Yale University, USA; INTEGRAL Science Data Centre, Versoix, Switzerland; Laboratoire d'Astrophysique de Marseille, France.

DES - Dark Energy Survey: LMU München, Excellence Cluster Universe, Germany; The Fermi National Accelerator Laboratory (Fermilab), University of Chicago, NAO, University of Michigan, University of Pennsylvania, University of Illinois at Urbana-Champaign, Ohio State University, Texas A&M University, University of California Santa Cruz, Stanford University, SLAC National Accelerator Laboratory, The Lawrence Berkeley National Laboratory, Argonne National Laboratory, USA; University College London, University of Cambridge, University of Edinburgh, University of Portsmouth, University of Sussex, University of Nottingham, UK; Observatorio Nacional, Centro Brasileiro das Pesquisas Físicas, Universidade Federal do Rio, Brasilien; Instituto de Ciencias dei Espacio, Institut de Física d'Altes Energies, Centro de Investigaciones Energeticas Medioambientales y Tecnológicas, Spain.

eBOSS - SDSS-IV Extended Baryon Oscillation Spectroscopic Survey: Carnegie Mellon University (CMU), University of Colorado Boulder, Harvard-Smithsonian Center

for Astrophysics Participation Group, Johns Hopkins University, Kavli Institute for the Physics and Mathematics of the Universe, New Mexico State University, New York University, The Ohio State University, Penn State University, University of Utah, University of Wisconsin, Yale University, USA; Max-Planck-Institut fuer Astrophysik (MPA Garching), Max-Planck-Institut für extraterrestrische Physik (MPE), Max-Planck-Institut für Astronomie (MPIA Heidelberg), Germany; National Astronomical Observatories of China, Shanghai Astronomical Observatory, China; United Kingdom Participation Group, University of Portsmouth, UK.

ERIS - Enhanced Resolution Imager and Spectrograph for the VLT: ESO, Germany; ETH Zürich, Switzerland; INAF Arcetri (with OAA, OATe and OAPd), Italy; UKATC Edinburgh, Scotland; NOVA Leiden, The Netherlands.

EinsteinProbe – Chinese Academy of Science, Institute of High Energy Physics, National Astronomical Observatories, China, ESA.

eROSITA - extended Roentgen Survey with an Imaging Telescope Array: AIP Potsdam, Universität Tübingen, Universität Bonn, Universität Erlangen, Universität Hamburg, Remis-Sternwarte Bamberg, MPA Garching, LMU (USM) München, Germany; IKI Moskau, Russia.

ESBO-DS - European Stratospheric Balloon Observatory – Design Study, EU H2020 project; University of Stuttgart, University of Tübingen, Germany; Swedish Space Corporation, Sweden; Instituto de Astrofísica de Andalucía, Spain.

EUCLID - ESA Mission to map the Dark Energy: ESA; Institut d'Astrophysique de Paris, France; Institute fur Astronomy, Universität Wien, Austria; Department of Physics and Astronomy, Ghent University, Belgium; Department of Physics and Astronomy, University of Waterloo, Canada; DTU Space, National Space Institute, Technical University of Denmark, Denmark; University of Helsinki, Department of Physics, Finland; Laboratoire d'Astrophysique de Marseille, Technopole de Marseille-Etoile, France; CEA/DSM/Irfu/Service d'Astrophysique, CE Saclay, France; Max-Planck-Institute for Extraterrestrial Physics, Germany; Max Planck Institute for Astronomy, Germany; Dipartimento di Fisica e Astronomia, Università di Bologna, Italy; INAF-Osservatorio di Roma, Italy; Chiba University, Japan; Leiden Observatory, Universiteit Leiden, Netherlands; Institute of Theoretical Astrophysics, University of Oslo, Norway; Departamento de Física da Faculdade de Ciências da Universidade de Lisboa, Portugal; Institut d'Estudis Espacials de Catalunya, Spain; Instituto de Astrofísica de Canarias, Spain; Institute for Space Science, Romania; Physique Théorique, Université de Genève, Switzerland; Physics Department, Lancaster University, UK; Astrophysics Research Group, University of Surrey, UK; NASA Jet Propulsion Laboratory, USA.

Fermi/GBM - Fermi Gamma-Ray Burst Monitor: Marshall Space Flight Center Huntsville, University of Huntsville, USA.

Fermi/LAT - Fermi Gamma-Ray Large Area Space Telescope: Stanford University Palo Alto, Naval Research Laboratory Washington DC, Sonoma State University Rohnert Park, Lockheed Martin Corporation Palo Alto, University of California Santa Cruz, University of Chicago, University of Maryland Greenbelt, NASA Ames Research Center Moffett Field, NASA Goddard Space Flight Center for High Energy Astrophysics Greenbelt, Boston University, University of Utah Salt Lake City, University of Washington Seattle, SLAC Particle Astrophysics Group Palo Alto, USA; ICTP and INFN Trieste, Istituto Nazionale di Fisica Nucleare Trieste, Italy; University of Tokyo, Japan; CEA Saclay, France.

GRAVITY - Instrument for VLT Interferometry: MPIA Heidelberg, Universität Köln, ESO Garching, Germany; CENTRA Lisbon and Porto, Portugal; IPAG Grenoble, Observatoire de Paris / Meudon (LESIA), France.

GRAVITY+ - VLT Interferometry upgrade project: MPIA Heidelberg, Universität Köln, ESO Garching, Germany; CENTRA Lisbon and Porto, Portugal; IPAG Grenoble, Observatoire de Paris / Meudon (LESIA), OCA Nice, CRAL Lyon, France; University of Southampton, UK; KU Leuven, Belgium.

HETDEX - Hobby-Eberly Telescope Dark Energy Experiment: University of Texas, Austin, Pennsylvania State University, Texas A&M University, USA; AIP Potsdam, LMU, USM, Germany.

INODE - Intelligent Open Data Exploration: Zürcher Hochschule für Angewandte Wissenschaften, ATHENA RC, Research and Innovation Center in Information, Communication and Knowledge Technologies, Fraunhofer Institute for Computer Graphics Research IGD, Infil Technologies Private Company, Center National de la Recherche Scientifique, SIRIS Academic SL, Swiss Institute of Bioinformatics, Free University of Bozen-Bolzano.

INTAS - Cooperation of Western and Eastern European Scientists: France, Germany, Norway, Russia.

ISDC - INTEGRAL Science Data Centre: Observatoire de Geneva Sauverny, Switzerland; Service d'Astrophysique Centre d'Etudes de Saclay, France; Rutherford Appleton Laboratory Oxon Dept. of Physics University Southampton, UK; Institut für Astronomie und Astrophysik Tübingen Germany; Danish Space Research Institute Lyngby, Denmark; University College Dublin, Ireland; Istituto di Fisica Milano, Istituto di Astrofisica Spaziale Frascati, Italy; N. Copernicus Astronomical Center Warsaw, Poland; Space Research Institute of the Russian Academy of Sciences Moscow, Russia; Laboratory for High Energy Astrophysics GSFC Greenbelt, USA.

INTEGRAL-Spectrometer SPI: Centre d'Etude Spatiale des Rayonnements (CESR) Toulouse, CEA Saclay Gif-sur-Yvette, France; University de Valencia Burjassot, Spain.

LBT - Large Binocular Telescope Project: MPIA Heidelberg, MPIfR Bonn, Landessternwarte Heidelberg Königstuhl, AIP, Germany; University of Arizona, Tucson, Ohio State University, Columbus, Research Corporation, USA; INAF, Italy.

MICADO - Multi-Adaptive Optics Imaging Camera for Deep Observations: ESO, LMU (USM), MPIA Heidelberg,

IAG Göttingen, Germany; INAF-OAPD Padova, INAF-OAR Roma, Italy; A* (an Austrian partnership comprising the University of Vienna, the University of Innsbruck, the University of Graz, and the University of Linz [with RICAM Linz]; specific contributions to MICADO come from Vienna/Innsbruck/Linz), Austria; NOVA (a federation several astronomical institutes; specific contributions to MICADO come from the University of Groningen, the University of Leiden, and the NOVA optical/infrared instrumentation group based at ASTRON in Dwingeloo), The Netherlands; CNRS/INSU (representing LESIA and GEPI, Paris, IPAG, Grenoble and UTINAM, Besançon), France; FINCA (University of Turku) Turku, Finland.

MXT - Microchannel X-Ray Telescope for Gamma-Ray Bursts: CEA, Saclay, France; University of Leicester, UK.

OPTIMA: AIP, MPI für Astrophysik, Universität Hamburg, Germany; University of Crete, Greece; University Zielona Gora, Poland; University Lund/Observatory, Schweden.

PFS - The Subaru Prime Focus Spectrograph Collaboration: Kavli Institute for the Physics and Mathematics of the Universe, Japan; The University of Tokyo Institutes for Advanced Study (UTIAS), University of Tokyo, Japan; National Astronomical Observatory of Japan; Academia Sinica, Institute of Astronomy and Astrophysics, Taiwan; California Institute of Technology, USA; NASA Jet Propulsion Laboratory, USA; Laboratoire d'Astrophysique de Marseille, France; Princeton University, USA; Johns Hopkins University, USA; IAG/Universidade de Sao Paulo, Brazil; Laboratório Nacional de Astrofísica, Brazil; Max-Planck-Institut für Astrophysik, Garching; Shanghai Jiao Tong University, China; National Astronomical Observatories of China; Tsinghua University, China; The University of Science and Technology of China; Xiamen University, China; Peking University, China; Columbia University, USA; Tufts University, USA; University of Connecticut, USA; University of Illinois at Urbana-Champaign, USA; University of Pittsburgh, USA; University of Massachusetts Amherst, USA; Pennsylvania State University, USA.

SBNAF - Small Bodies Near and Far, EU H2020 project; Poznań, Poland; Instituto de Astrofísica de Andalucía, Granada, Instituto de Astrofísica de Canarias (IAC), Spain; Konkoly Observatory, Budapest, Hungary; Institute of Space and Astronautical Science (ISAS, JAXA), Kanagawa, Japan.

SDSS - Sloan Digital Sky Survey: MPA Garching, MPIA Heidelberg, Germany; Univ. of Washington, Seattle, Fermi National Accelerator Laboratory, Batavia, University of Michigan, Ann Arbor, Carnegie Mellon University, Pittsburgh, Penn State University, University Park, Princeton University Observatory, Princeton, Institute of Advanced Study Princeton, Space Telescope Science Institute, Baltimore, Johns Hopkins Univ. Baltimore, USA.

Swift - Gamma-Ray Burst Mission: NASA/GSFC Greenbelt, Penn State University, USA; University of Leicester, Mullard Space Science Laboratory London, UK; Osservatorio Astronomico Brera, Italy.

XMM-Newton/SSC (Survey Science Center): AIP, Germany; SAP Saclay, CDS Strasbourg, CESR Toulouse, France; University of Leicester, Institute of Astronomy Cambridge, MSSL London, UK.

XMM-Newton/EPIC (European Photo Imaging Camera): SAP Saclay, IAS Orsay, CESR Toulouse, France; University of Leicester, University Birmingham, UK; CNR Mailand-

Palermo-Bologna-Frascati, Osservatorio Astronomico Mailand, Italy; Institut für Astronomie und Astrophysik Tübingen, Germany.

Industrial Collaborations

3d shape GmbH, Erlangen: Metrology for slumped glass mirror study.

ABN GmbH, Neuried: Ongoing servicing of the MPE test facility PANTER.

ACM GmbH, Naumburg - Acktar Ltd., Kiryat-Gat, Israel: Schwärzen für EUCLID.

af inventions, Braunschweig: FPGA Programmierung für eROSITA.

AHC Oberflächentechnik GmbH / Aalberts Surface Technologies GmbH: coating for MICADO

ALPAO, Montbonnot-Saint-Martin, France: GRAVITY+ deformable mirrors.

Alwin Müller GmbH & Co. KG, Nürnberg: Oberflächenbeschichtung vieler Projekte.

Ariane Group GmbH, Munich: EUCLID design study, eROSITA, ATHENA, Oberflächenbeschichtung und cleanliness control EinsteinProbe.

Array Electronics, Eggenstein: DAQ development OPTIMA.

BASF Coatings AG, Münster: Investigations on the scattering properties of micro particles.

Bräuninger & Konstruktionen, Neuried: Construction and manufacturing of laboratory equipment.

Buchberger GmbH, Tuchenbach: Manufacturing of parts for PANTER manipulators.

Carl Zeiss QEC GmbH, Garching b. München, Deutschland: Messdienstleistungen, EinsteinProbe.

Christian Rehm - ISKON, Isen: Design and mechanical engineering for MICADO, GRAVITY+.

CryoVac GmbH, Troisdorf: MICADO Cryostat.

DHL Special services, Flughafen München, EinsteinProbe.

Dico-Solutions, München: eROSITA Betrieb.

DoKaSch TEMPERATURE SOLUTIONS GmbH, Kelsterbach, Deutschland: klimatisierte Frachtcontainer, EinsteinProbe.

ECM Engineered Ceramic Materials GmbH, Moosinning: Hersteller von CESIC.

EATON Powering Business Worldwide, Camarillo, CA, USA: Actuators separation-nuts for eROSITA.

First Light Imaging, Meyreuil, France: GRAVITY+ wavefront sensor cameras.

Fraunhofer IOF, Jena: Mirror development for MICADO.

Freyer GmbH, Tuningen: PANTER.

Frühschütz Lohngalvanik GmbH, Penzberg: Oberflächenbeschichtung vieler Projekte.

Gräfe Spezialoptik GmbH, Camburg: Zerodur-Materialbearbeitung und -Lieferant.

Hans Englert GmbH, Berlin: Manufacturing of front panels and metering devices.

HERMLE AG, Gosheim, Milling Machines, MPE Workshop. HOC Optik Dr. Christoph Horneber, Lauf: GRAVITY+

Hochschule München, Laserlabor, Prof. Heinz Huber, München: Materialbearbeitung mit Ultrakurzpulsar laser.

Industrieanlagen – Betriebsgesellschaft mbH (IABG), Otobrunn: Testanlagen, Luftfahrtsicherheit, EinsteinProbe.

Industrieberatung Reinhard Katterloher, München: Specifications for MICADO Test Cryostat.

Ingenieurbüro Josef Eder, Hilgertshausen: System engineering for eROSITA, ATHENA, Einstein Probe.

Ingenieurbüro Weisz, München: Design and mechanical engineering for MICADO and GRAVITY+.

Ingenieurbüro Michael Kautz, Regensburg, Design and mechanical engineering for CAS.

Kampf Telescope Optics (KTO), München: Design & System Engineering for MICADO.

LaserJob GmbH, Fürstenfeldbruck, Deutschland: Präzisions-Laserzuschnitt und Schweißen EinsteinProbe. LEX GmbH, Miesbach, Deutschland:

Mechanische Fertigung, ATHENA, EinsteinProbe.

LT Ultra, Herdwangen-Schönach: Spiegelhersteller.

Feinmechanische Werkstätte Thomas Markl GmbH, Deisenhofen; eROSITA.

GEWO Feinmechanik GmbH, Hörlkofen: EinsteinProbe, MICADO.

Media Lario Srl, Bosisio Parini, Italien: eROSITA, EinsteinProbe.

OHB System AG, München: EUCLID design study.

Peter Blank GmbH, Aschaffenburg: Mechanische Fertigung MICADO, GRAVITY+.

Peter Feckl Maschinenbau GmbH, Forstern: Spiegelmodule EinsteinProbe.

Physik Instrumente (PI): Präzisions-Positionier-Systeme.

Plappert Industrieanlagen GmbH, Schorndorf: Design and mechanical engineering for MICADO Handling Tools.

Qioptic GmbH, Feldkirchen: Oberflächenbeschichtung vieler Projekte.

Steinmeyer Mechatronik, Dresden: GRAVITY+ translational stages.

Tafelmaier Dünnschicht-Technik, Rosenheim: Optical Coatings, GRAVITY+.

Tesat-Spacecom GmbH & Co. KG, Backnang: FMECA und Zuverlässigkeitsanalyse für ATHENA WFI.

Unholtz-Dickie Corp., Wallingford, USA: Shaker System, MPE Test Facility.

Steinmeyer Mechatronik, Dresden: GRAVITY+ translational stages.

Tafelmaier Dünnschicht-Technik, Rosenheim: Optical Coatings, GRAVITY+.

Unholtz-Dickie Corp., Wallingford, USA: Shaker System, MPE Test Facility.

Activities in Transfer of Know-How

The high number of cooperations with industry and other research groups lead to a natural transfer of scientific and technical know-how, especially if orders are given to the industry.

By the end of 2022 the MPE held a total of 17 patents and 4 licences