

ANNUAL STATISTICS 2023



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Prof. Dr. D. Kranzlmüller, Chairman of the Board at the Supercomputing Centre LRZ, Garching

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Dr. J. Rubner, Vice President Global Communication and Public Engagement, Technical University Munich, Munich

Dr. M. Weiß, Süddeutsche Zeitung, Munich

MDirig Dr. M. Wolter, Bavarian Ministry of Economic Affairs, Regional Development and Energy, Head of dep. 4

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

Scientific Honours, Appointments

Eisenhauer, F.: Adjunct Professor, Technical University Munich, Munich, Germany, 01/2023.

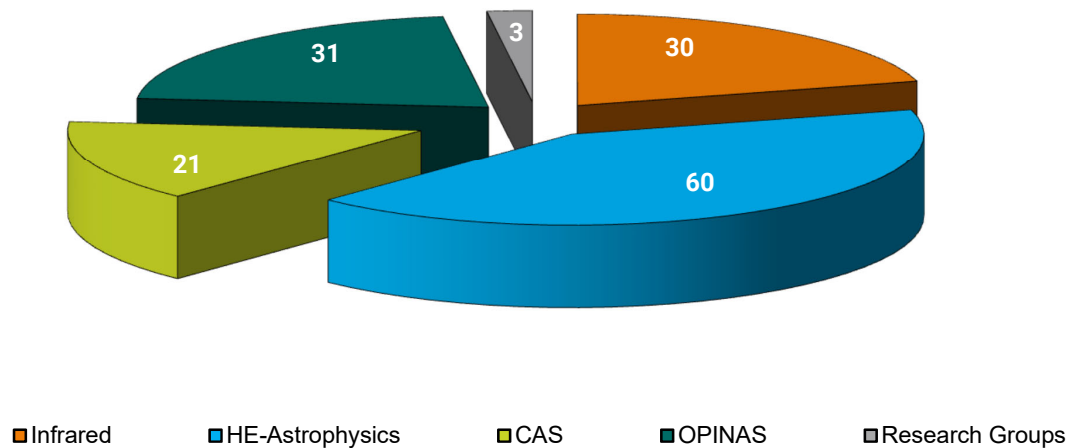
Sanchez, A. G. as part of the SDSS/BOSS/eBOSS collaborations: Giuseppe and Vanna Cocconi Prize 2023, European Physical Society, Mulhouse, France, 08/2023

Eisenhauer, F.: Instrument Development Award, German Astronomical Society, Berlin, Germany, 09/2023.

Genzel, R.: honorary doctorate at the University of Grenoble, Université Grenoble Alpes, Grenoble, France, 10/2023

Science Groups

Staff Members by Science Group



Infrared and Submillimeter Astronomy

Secretary: Richter, A.

Team Assistants: Dengler, S.; Herfert, B. (since 01.04.); Kleiser, A.; Simonis, E. (until 15.01.); Zanker-Smith, J.

Biondi, Dr. F.; Bourdarot, Dr. G.; Cao, Dr. Y.; Chen, Dr. J. (since 01.09.); Davies, Dr. R.; Eisenhauer, Dr. F.; Espejo Salcedo, Dr. J. (since 15.04.); Feuchtgruber, Dipl.-Phys. H.; Förster Schreiber, Dr. N.; Gillessen, Dr. S.; Gopinath, V. (since 16.10.); Grant, Dr. S.; Jolly, Dr. J.-B.; Kravchenko, Dr. K.; Kurtovic, Dr. N. (since 01.09.); Liu, Dr. D.; Lutz, Dr. D.; More, N.; Ott, Dr. T.; Pulsoni, Dr. C.; Rabien, Dr. S.; Shang-guan, Dr. J.; Shimizu, Dr. T.; Sturm, Dr. E.; Tacconi, Dr. L.; Widmann, Dr. F.; Yazici, S.

Guests

Nestor, A. (12.-18.02.); Netzer, Prof. H. (23.-27.03., 15.-21.07.); Price, D., S. (29.05.-02.06.); Dexter, Dr. J. (12.06.-16.06.); Herrera Camus, Dr. R. (28.06.-07.08.); Temmink, M. (18.-20.09.); Banzatti, Dr. A. (18.-20.09.); Vlasblom, M. (18.-20.09.); Generezov, Dr. A. (19.09.-03.10.); Sykes, Dr. C. (24.-28.10.); Belfiore, Dr. F. (03.12.-08.12.); Sari, Prof. R. (02.12.23 -28.01.24); van Dishoeck, Prof. E.; Finger, Dr. Gert; Amaro Seoane, Dr. P.; Sternberg, Prof. A.; Tamburo, P.

PhD (D.) / Master (M.)

Barf ty, C. (D., F rster Schreiber); Bordoni, M.S. (D., Genzel/ Gillessen); Drescher, A. (D., Eisenhauer); Lee, L. Y.-L., (D., Tacconi, F rster-Schreiber); Mang, F. (D., Eisenhauer); Pastras, S. (D., Genzel/F rster Schreiber); Ribeiro, D. (D., Genzel/Gillessen); Santos, D. (D., Shimizu)

High-Energy Astrophysics

Secretary: Boller, B.

Teamassistant: Frankenhuizen, W. (until 31.10.)

Altmann, A.; Andritschke, Dr. R.; Antonelli, V.; Artis, Dr. E.; Becker, Dr. W.; Behrens, Dr. A.; Boller, Prof. Dr. Th.; Brunner, Dr. H. (until 30.06.); Buchner, Dr. J.; Bulbul, Dr. E.; Burgess, Dr. M.J. (until 30.09.); Burkert, Dr. W.; Burwitz, Dr. V.; Compa-rat, Dr., J.; Dennerl, Dr. K.; Eder, Dipl.-Ing. J.; Emberger, V.; Freyberg, Dr. M.; Friedrich, Dr. P.; Friedrich, Dr. S.; Gaida, R.; Gatuzz, Dr. E.; Garell, Dr. C. (since 22.02.); Ghirardini, Dr. V.; Gueguen, Dr. A.; Greiner, Dr. J.; Haberl, Dr. F.; Hartner, Dipl. Math. G.; Haase, Dr. J. (until 31.01.); Hauser, G.; Keil, Dr. I (until 31.03.); Kienlin von, Dr. A; Kluge, Dr. M.; Liu, Dr. A.; Laas, Dr. J.; Liu, Dr. T. (until 31.07.); Liu, Dr. Z.; Locatelli, N. (until 30.04.); Maitra, Dr. Ch.; Meidinger, Dr. N.; Mayr, A.; Merloni, Dr. A.; M ller, T.; M ller-Seidlitz, Dr. J.; Ni, Dr. Q.; Osterhage, Dr. S.; Pietschner, D.; Predehl, Dr. P.; Rachovitis, G. (since 15.03.); Ramos Ceja, Dr. M.; Rau, Dr. A.; Rukdee, Dr. S.; Salvato, Dr. M.; Sanders, Dr. J.; Schmidt, T.; Schnetler, Dr., H. (since 01.04.); Schweingruber, A.; Shirley, Dr. R. (since 17.04.); Stieglitz, V.; Stanke, Dr. Th.; Stewart, Dr. I.; Thi, Dr. W.-F. (until 31.05.); Tr mper, Prof. Dr. J.; Zhang, Dr. X.

Guests

Begue, Damien (13.03.-17.03.); Collmar, Dr. W.; Diehl, Dr. R.; Getachew, Sofia; (03.-07.07.); Munoz Rodr guez, Iv n (02.05.-30.06.); Kerrison, Emily Florence (07.07.-30.07.23); L pez, Xavier (01.05.-31.07.); Mate Dr., Sujay (03.-04.07.23); Rodrigues, Myriam (29.11.-30.11.23); Sarkar, Kartick Chandra 08.11.-11.11.); Scheck, D.; Sch sser, Elisa (15.-17.03.); Strong, Dr. A.; Schr der Dr. A.; Schnetler, Hermine (19.03.-22.03.); Takamitsu, Prof., Miyaji (28.04.-02.05.)

PhD (D.) / Master (M.)

Aydar, C. (D., Merloni); Bacelj, A. (D., Greiner); Bahar, E. (D., Bulbul); Biltzinger, B. (until 30.04., D., Greiner); Bock, K. (M., Greiner); Camilloni, F. (D., Becker); Fresco, A. (until 31.07., D., Merloni); Gauger, I. (D., Buchner); Goswami, D.K. (M., Salvato); Grotova, I. (D., A. Rau); Hecker, Y. (until 30.04., M., Greiner); Hecker, C. (until 31.05., M., Greiner); Kaltenberger, D. (D., Haberl); Khrokriakova, A. (D., Becker); Igo, Z. (D., Merloni); Mayer, M. (until 31.05., D., Becker); Olechovska, A., (since 01.01., M., Salvato); Preis, T., (since 01.10., M., Greiner); Roster, W. (D., Salvato); Schmidt, L. (until 31.08., M., Greiner); Shreeram, S., (D., Bulbul); Sepi, R. (until 30.06., D., Comparat); Temourzadeh, S. (since 06.04., M., Comparat); Waddell, S. (D., Nandra, Boller); Willer, R. (D., Greiner); Wolf, J. (until 30.06., D., Salvato); Yeung, H.F., (D., Becker); Zhang, Y., (D., Ponti); Zelmer, S. (since 01.07. D., Bulbul); Zheng, X. (D., Ponti)

Optical and Interpretative Astronomy

Secretary: Ingram, C.

Blana Diaz, Dr. M. (since 07.03.); Bodendorf, Dr. C.; Bohnet, Dipl. Phys. A.; Burkert, Prof. Dr. A.; Contarini, Dr. S. (since 01.11.); Correa, Dr. C.; DeNicola, Dr. S.; Erhardt, J. (since 15.06.); Escartin, Dr. J. (until 31.12.); Fabricius, Dr. M.; Fink-beiner, L. (since 07.11.); Gerhard, Prof. Dr. O.; Gracia Carpio, Dr. J.; Grupp, Dr. F.; Haase, J.; Hou, Dr. J. (since 01.06.); Hopp, Dr. U.; Kluge, Dr. M.; Kruk, Dr. S. (until 31.01.23); Lange, J. (since 01.10.); Maleubre Molinero Dr. S. (until 10.09.); Masoumzadeh Jouzdani Dr. N. (since 01.11.); Mehrgan, Dr. K. (since 01.12.); Neureither, Dr. B. (since 01.08.); Paech, Dr. K.; Parikh, Dr. T. (until 31.3.); Pezzotta, Dr. A.; Raison, Dr. F.; Saglia, PD. Dr. R.; Sanchez, Dr. A.; Saulder, Dr. C. (since 01.07.); Snigula, Dr. J.; Steinwagner, Dr. J.; Subramanian, Dr. S. (until 30.04.); Thomas, Dr. J.; Weller, Prof. Dr. J.; Wetzstein, Dr. M.; Wylie, Dr. S. (until 31.10.)

PhD (D.) / Master (M.)

Anetjärvi, M. (D., Saglia); Balzer, F. (D., Saglia); Bolze, R. (M., Bender); Blumhof, M. (M., Bender); Delley, D. (since 15.09., D., Saglia); Ding H. (since 01.07., D., Saglia); Esposito, M. (D., Saglia); Fiorilli, A. (D., Saglia); Finkbeiner, L. (M., Fabricius); Gong, L. (D., Bender); Ding, H. (M., Fabricius); Koc, A. (until 01.10., M., Saglia); Langgassner, F. (since 15.09.; D., Fabricius); Lipka, M. (D., Saglia); Luis, T. (D., Saglia); Merghan, K. (until 31.11., D., Bender); Neureither B. (until 31.07., D., Thomas); Pandey, A. (D., Gerhard); Pippert, J. (since 01.12., D., Bender); Perez Fernandez A. (since 01.09., D. Sanchez); Shahriyar, M. (since 01.06., M., Saglia); Seménaite, A. (until 31.10., D., Sanchez); Thikonenko, I. (D., Saglia); Wessely, P. (until 19.05., M.; Fabricius)

Guests

Chou, Y. (04.07.-14.09.); Eggemeier, A. (03.05.-16.05); Hill, Pof. Dr. G. (05.06.-31.08.); Kormendy, Prof. Dr. J. (since 15.08.-05.02.); Müller, S. (21.8.-15.9.); 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.; Araki, Dr. M.; Bunn, Dr. H.; Endres, Dr. Ch.; Giuliano, Dr. B.M.; Gieser, Dr. C.; Gong, Dr. M.; Hsieh, Dr. T.-H.; Ivlev, Dr. A.; Jensen, Dr. S.; Jiménez Redondo, Dr. M.; Jusko, Dr. P.; Küffmeier, Dr. M. (until 31.08.); Lattanzi, Dr. V.; Lin, Dr. Y.; Maureira Pinochet, Dr. M.J.; Pineda Fornerod, Dr. J.; Redaelli, Dr. E.; Sipilä, Dr. O.; Spezzano, Dr. S. .

Guests

Akimkin, Dr. V. (until 31.03.); Alves, Dr. J. (25.10.-27.10.); Arce, Dr. H. (17.10.-25.10.); Arzoumanian, Dr. D. (11.06.-15.06.); Bianchi, Dr. E. (27.03.-30.09.); Bouscasse, Dr. I. (26.06.-28.06.); Bialy, Dr. S. (04.09.-027.09.); Bovolenta, Dr. G. (18.06.-24.06.); Baby, A. (04.06.-06.06.); Chapillon Dr. E. (26.06.-28.06.); Carone, Dr. L. (09.03.-11.03.); Cazaux, Dr. S. (15.11.-17.11.); Collmar, Dr. W. (01.01.-31.12.); Dahl, R. (01.10.-31.12.); Das, Dr. A. (until 28.02.); Dohnal, Dr. P. (10.07.-23.08.); Dulieu, Dr. F. (24.04.-28.04.); Eschen, Y. (01.01.-31.12.); Fuente, Dr. A. (26.06.-28.06.); Guillemín, Dr. J.C. (13.12.-15.12.); Guilloteau, Dr. S. (26.06.-28.06.); Haugboelle, Dr. T. (20.06.-22.06.); Husquienet, B. (24.04.-12.05.); Helling, Dr. Ch. (09.03.-10.03.); Inostroza, Dr. N. (09.10.-16.10.); Kratter, Dr. K. (21.06.-29.06.); Lam Siu, Grace (16.01.-12.02.); Lomeli, David (01.06.-31.07.); Lopez Sepulcre, Dr. A. (26.06.-28.06.); Milam, Dr. S. (16.04.-20.04.); Misugi, Dr. Y. (07.09.-04.10.); Munoz Caro, Dr. G.M. (15.11.-17.11.); Marcelino, Dr. N. (07.05.-13.05.); Neufeld, Dr. D. (08.11.-09.11.); Neri, Dr. R. (24.06.-27.06.); Nomura, Dr. H. (20.03.-22.03.); Punanova, Dr. A. (09.10.-13.10.); Rab, Dr. Ch. (01.01.-31.12.); Semonov, Dr. D. (25.06.-30.06.); Segura-Cox, Dr. D. (18.06.-02.07.); Shahid, Anique (01.06.-31.12.); Thusbaß, S. (14.11.-01.12.); Uvarova, Dr. L. (10.7.-04.08.); Van der Mare, Dr. N. (27.10.-28.10.); Woitke, Dr. P. (09.03.-10.03.); Yoshida, Dr. T. (03.12.-06.12.); Yocum, K. (14.04.-05.05.); Weber, M. (until 30.09.)

PhD (D.) / Master (M.)

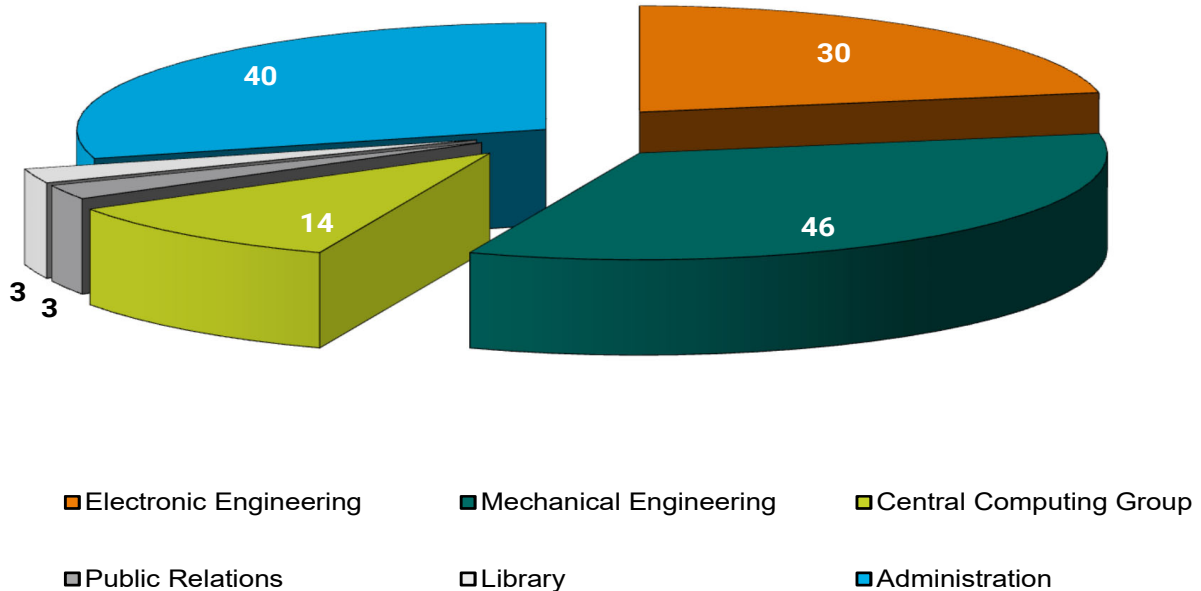
Alberton, D. (D., Caselli); Bethlehem, J. (since 01.09., D., Caselli); Ferrada Chamorro, S., (until 31.03, D., Caselli); Ferrer Asensio, J., (D., Caselli, Spezzano); Giers, K. (D., Caselli, Spezzano); Kakkenpara Suresh, S., (D., Caselli); Obolentseva, M. (D., Caselli, Ivlev); Riedel, W. (D., Caselli, Redaelli); Tabatabaei Mazraeh No, F.S. (D., Caselli, Redaelli); Valdivia Mena, M. T. (D., Caselli, Pineda Fornerod); Vyjidak, A. (since 01.07., D., Caselli, Giuliano); Zamponi Fuentealba, J. (D., Caselli, Maureira Pinochet)

Working Group van Dishoeck

van Dishoeck, Prof. Dr. E.; Grant, Dr. S., Kurtovic, Dr. N. (since 01.09.)

Engineering and Workshop

Engineering, Workshops and Central Services Staff



Electronical Engineering

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.; Graf, M.Sc. (FH) J. (since 01.09.); Hälker, Dipl.-Ing. (FH) O.; Hans, O.; Hartmann, K.; Jilg, Dipl.-Ing. (FH) T.; Kink, Dipl.-Ing. (FH) W. (until 31.01.); Kshirsagar, M.Sc. T. (until 30.06.); Lederhuber, M.Sc. A. (since 01.11.); Müller, Dipl.-Ing. (FH) S.; Neumeier, M.Sc. L.; Öncü, M.Sc. E. (until 30.06.); Rau, M.Sc. C.; Reiffers, Dipl.-Ing. (FH) J.; Spallek, B.Sc. (FH) L. (since 11.09.); Uysal, M.Sc. S. (until 30.11.); Zanker-Smith, J.; Ziegleder, Dipl.-Ing. (FH) J.

Electronical Workshop and Utilities Management

Oberauer, F. (Head)

Bachhuber, M.; Berger A.; Cibooglu, H.; Greßmann, R.; Kreibich, I.; Langer, P.; Özdemir, H.; Schneider R.

PhD (D.) / Master (M.)

Graf, J. (M., Neumeier) (von 01.02. until 31.08.)

Mechanical Engineering and Test Facilities

Lang, Dipl.-Phys. F. (Head)

Antonelli, Dr.-Ing. V.; Dey-senroth, C.; Deysenroth, M.; Ditrach, Dipl.- Ing. (FH) K.; Emslander, B. Eng. A.; Hartl, Dr. M.; Haußmann, F.; Huber, Dipl.-Ing. H.; Mican, Dipl.-Ing. B.; Möller, M. Eng. J.-P.; Mügge, M.Sc., J. (since 01.10.2023); Paßlack, Dipl.-Ing. (FH) S.; Pflüger, Dipl.-Ing. (FH) A.; Pietschner, Dipl.-Ing. (FH) D.; Rohe, C.; Saraf, M.Sc., A. M.; Sönmez, M. Sc. A.; Strecker, R.; Yazici Dipl.-Phy. S.

Mechanical Workshop

Werkstattleitung: Czempiel, S (until 28.02.); Brara, A. (ab 01.03.)

Bayer, R.; Bergner, K.; Eibl, J.; Feldmeier, P.; Folek L.; Furchtsam, C.; Furchtsam, S. (since 01.02.) Goldbrunner, A.; Hartwig, J.; Heckmair, S. (until 11.09.); Honsberg, M.; Huber, D.; Kestler, H.-J.; Knapp, S.; Loichinger, L.; Sandmair, R.; Schunn, W.; Schuppe, D.; Soller, F.; Stadler, B. (since 01.07.) Waldhör, F.

Apprentices

Beck, A.; Fokken M.; Greis, N. (since 01.09.); Kellerer, L. (since 01.09.); Schaefer, T.; Stübing, M.; Weber, G.

Central Services

Central IT Group

Bohnet, Dipl. Phys. A. (Head)

Agudo Berbel, A.; Baumgartner, Greck, G (since 1.10.); 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.

Public Relations

Hämmerle, Dr. H.; (Head)

Herrmann, T.; Niebisch, B.

Library

Bartels, C. (Head)

Blank, E. (until 30.10.), Balicevic, M.

IMPRS

Hilbert, A.

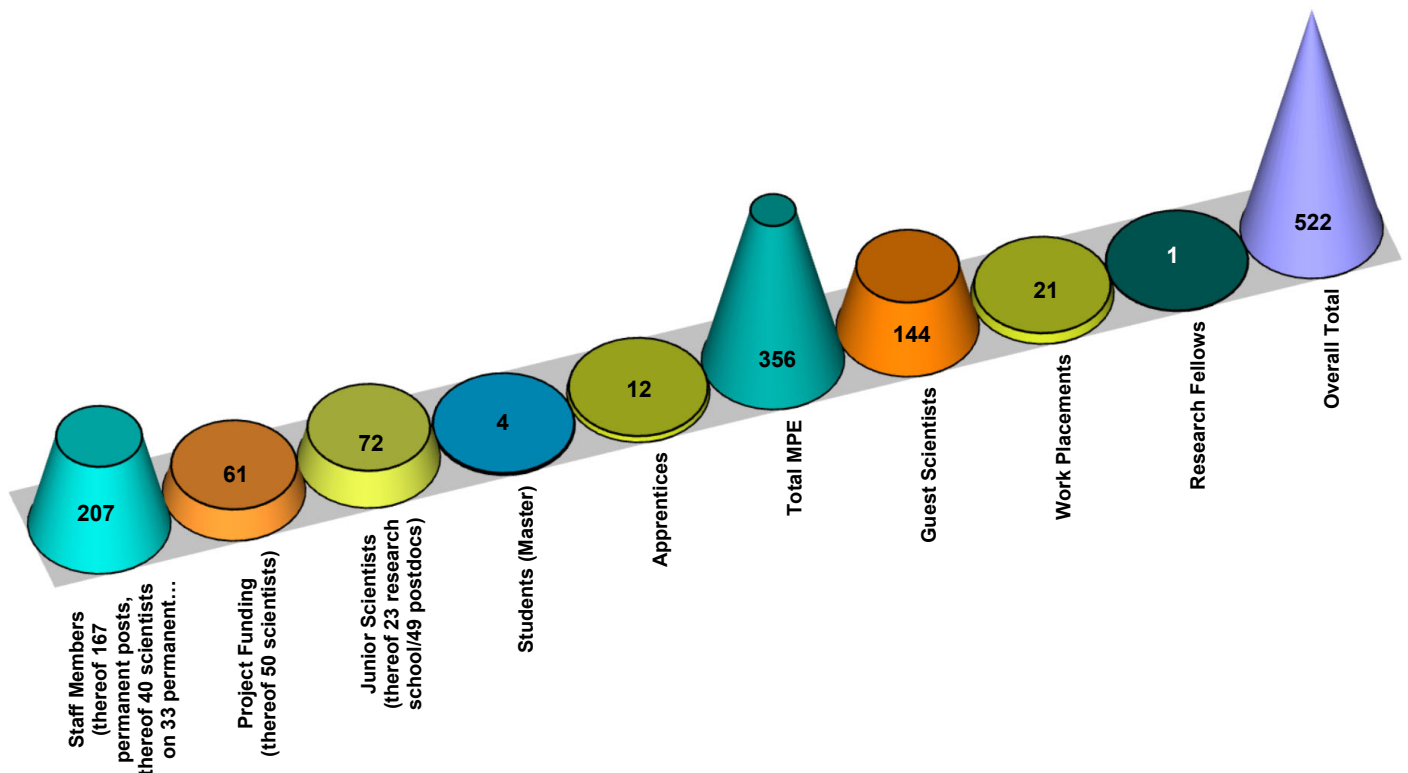
Administration

Fischhaber, P. (Head VAD)

Secretary: Hesseler, G. (until 31.08.), Friedrich, F. (since 01.09.)

Arturo, A.; Ayari, S.; Bauer, T.; Brara, S. (since 01.09.); Cziasto, U.; Eder, A. (until 31.07.); Eicher, C.; Faust, T. (until 31.08.); Gareva, L.; Goldbrunner, S.; Grohmann, M.; Hartung, I.; Hausmann, S.; Hidasi, R.; Jäkel, T.; Jirsch, Y.; Kaps, S.; Keil, M.; Kestler, L.; Konan, E. (since 01.09.); Krapivina, A.; Kuhwald, E. (until 31.07.); 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.; (until 31.10.); Zubanova, E.

Personnel Statistics



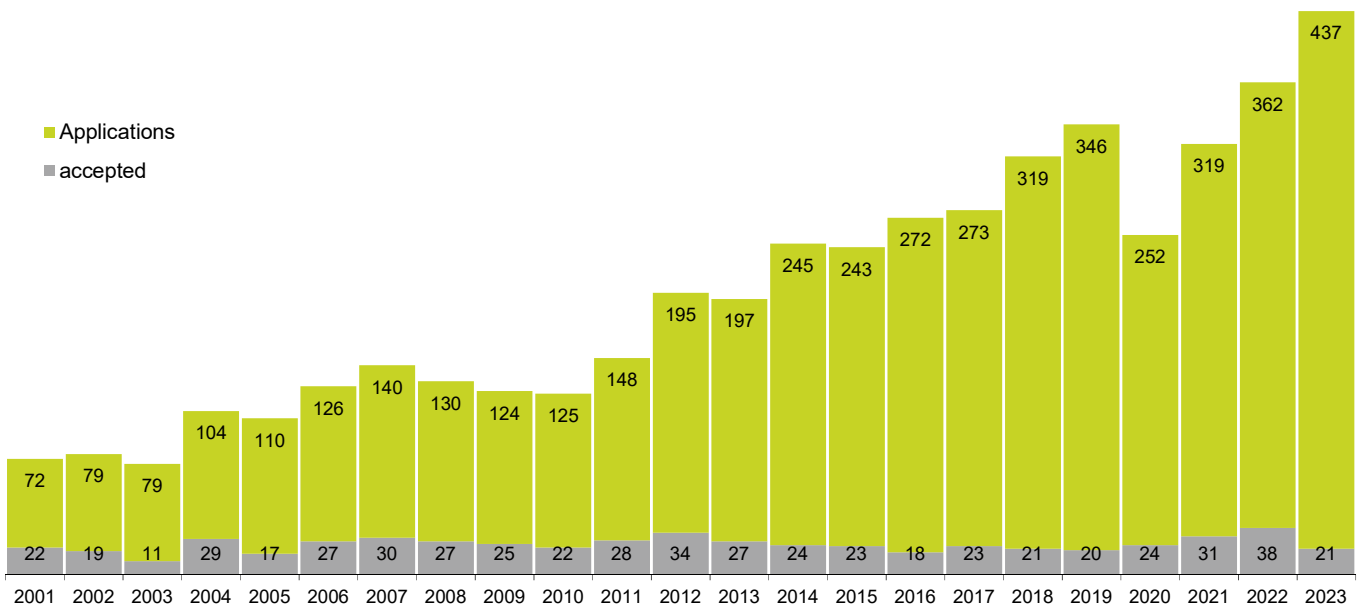
International Max Planck Research School (IMPRS) for Astrophysics

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 2023 a total of 118 students took part in the program, thereof 57

at the MPE. 437 students from 62 countries applied for the year 2023. 21 Studenten were accepted, thereof 9 at the MPE.

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

IMPRS Applications since 2001



Summar of annual applicants for the IMPRS Program in Garching. Since its start in 2001, a total of 4697 students applied until 2023, 561 were accepted.

Public Relations Work

In 2023 the MPE engaged in the following PR activities: 19, public talks by MPE scientists, 24 press releases on scientific results and general news (scientific prizes, awards). In total, the MPE hosted 16 visitor groups in 2023.

GirlsDay 2023 was held at the institute with 48 girls and consisted of several lectures, a panel discussion on career paths at MPE and in astrophysics in general, several interactive sessions from the various scientific departments and an astro quiz. In addition, four girls spent the day in the training workshop.

Activities on social media were also continued and intensified in 2023. The MPE is now represented on X, formerly known as Twitter (@MPE_Garching), LinkedIn (MPE-Garching), Mastodon (mpe_garching) and Instagram (@mpe_garching).

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

Project Groups

(Project lead underlined)

Infrared and Submillimeter Astronomy

Head of Science and Personnel: Tacconi

Head of Finance: Lutz.

ERIS:

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

GRAVITY, GRAVITY+:

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

MICADO:

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

Galactic Center:

Bourdarot, Drescher, Eisenhauer, Genzel, Gillessen, Mang, T. Ott, Ribeiro, Sadun Bordoni, Widmann.

Galactic Nuclei:

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

Galaxies at High Redshift:

Barféty, Cao, Chen, Espejo, Förster Schreiber, Genzel, Joly, L. Lee, D. Liu, Lutz, Pastras, Pulsoni, Sturm, Tacconi.

Star Formation:

Grant, Kurtovic, 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, Freyberg, Haberl,

Hälker, Hartmann, Hauser, v. Kienlin, Lederhuber, Mayr, Mican, Möller, Müller, Müller-Seidlitz, Nandra, Pietschner, A. Rau, Reiffers, Saraf, Schnetler, Schweingruber, Sönmez, Strecker, Pflüger, Veredas.

Chandra:

Burwitz, Predehl.

Einstein Probe/Detector:

Keil, Meidinger, Nandra.

Einstein Probe/Mirror:

Budau, Burwitz, Eder, Friedrich, Gaida, Hartmann, Hartner, Langmeier, Z. Liu, Müller, Passlack, Pfeiffermann, 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, Hartner, F. Huber, Kink, Maitra, Meidinger, Merloni, Mican, S. Müller, Nandra, Ni, F. Oberauer, Pfeiffermann, Pietschner, Predehl, Ramos-Ceja, Rau, 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, Bornemann

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, Gatuzz, Ghiradini, Kluge, A. Liu, Locatelli, Ramos-Ceja, Sanders

eBOSS/SPIDERS:

Comparat, Merloni, Nandra, Salvato.

Optical and Interpretative Astronomy

Large Scale Structure, eBoss, HETDEX:

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

EUCLID:

Bender, Bodendorf, Fabricius, Garcia Carpio, Grupp, Haase, Hartung, Masoumzadeh, Raison, Saglia, Sanchez, Saulder, Steinwagner, Wetzstein.

Galaxy Dynamics:

Bender, de Nicola, Gerhard, Neureiter, Parikh, Saglia, Thomas.

INODE:

Bender, Fabricius, Subramanian.

GRAVITY+:

Bender, Fabricius, Graf, Jilg.

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, Öncü, Spezzano.

Teaching / Seminars

Johann Wolfgang Goethe University (Frankfurt am Main, Germany)

Boller, Th.

Astrophysikalische Beschreibung von Strahlung und Materie. (WS 23/24).

AGN Physics. (SS 23).

Instituto de Cibernética, Matemática y Física Havana (Havana, Cuba)

Boller, Th.

Observational and theoretical progress in AGN Physics. (WS 23/24).

MPE (Garching, Germany)

Bourdarot, G.

IR/Optical Interferometry, Series CAS@MPE Lecture. (WS 22/23).

Kapteyn Astronomical Institute, University of Groningen (Groningen, The Netherlands)

Caselli, P.

From atoms to seeds of life: the astrochemical journey. (SS 23).

Protostellar Chemistry. (SS 23).

Planet formation and chemistry. (SS 23).

Chalmers University of Technology (Gothenburg, Sweden)

Caselli, P.

From atoms to seeds of life: the astrochemical journey. (SS 23).

Technical University of Munich (Munich, Germany)

Eisenhauer, F.

Introduction to Astrophysics. (WS 22/23).

Introduction to Astrophysics. (WS 23/24).

High Angular Resolution Astronomy. (SS 23).

LMU (Munich, Germany)

Saglia, R.

Essential Astrophysics. (SS23).

LMU (Munich, Germany)

Spezzano, S.

Astrochemistry. (WS 23/24).

Organisation of Scientific Seminars / Conferences

Users Meeting of Cavity Spectroscopy. Wako, Saitama, 21.12.2023, Organisation: M. Araki, T. Oyama, K. Suma, K. Iwakuni.

Blaauw workshop: The (geo)chemistry of terrestrial planet formation and evolution. Groningen, 27.03-29.03.2023, Organisation: C. Dominik, Inge Loes Kate, T. Lichtenberg, A. Patrignani, F. van der Tak.

Second Workshop on German Science Opportunities for the ngVLA. Leipzig, 27.09-28.09.2023, Organisation: D. Riechers (co-Chair), P. Caselli, M. Flock, K. Kreckel, S. Vgetti.

799. Wilhelm and Else Heraeus Seminar on "Laboratory Astrophysics in the Age of ALMA and JWST". Heidelberg, 18.09-21.09.2023, Organisation: P. Caselli, M. Schnell.

Astrochemistry at high resolution Faraday Discussion. Maryland, USA, 31.05-02.06.2023, Organisation: P. Caselli, A.J.H.M. Meijer, N. Reid, I.R. Sims, N. Walker, S. Widicus Weaver.

EAS Annual Meeting 2023, SS10, The edge of galaxies from field to cluster environment: the build-up of stellar halos. Krakow, 14.07.2023, Organisation: M. Spavone, E. Iodice, A. P. Cooper, D. A. Forbes, C. Pulsoni, R. Remus, I. Trujillo, G. van de Ven.

EAS Symposium S7: One year of JWST: photodissociation regions, protostars, disks, and planets. Krakow Poland, 10.07.-14.07.2023, Organisation: M. Audard, M. Samland, O. Dionatos, C. Gieser, J. Green, A. Kospal, E. Habart.

The James Webb Space Telescope Turns One: The Birth and Growth of Galaxies. Sesto, Italy, 10.07. - 14.07.2023, Organisation: A. Adamo, M. Castellano, M. Dickinson, H. Ferguson, N. M. Forster Schreiber, A. Fontana, L. Pentericci, P. Rosati, P. Santini, A. Shapley, M. Tosi, T. Treu, E. Vanzella.

OPINAS seminar (weekly seminar). MPE - Seminar Room 368, Mondays, 11:30am, Organisation: A. Pezzotta, S. de Nicola.

SSI workshop "Active Galactic Nuclei in Next Generation Surveys". Berne, Switzerland, 27.11. - 30.11. 2023, Organisation: S. Fotopoulou, M. Salvato, V. Allevato, A. Bongiorno, M. Bolzonella, B. Lusso, F. La Franca, M. Mignoli, M. Talia, F. Ricci, S. Paltani

SDSS-V Collaboration meeting. New York, USA, 31.07. - 04.08. 2023, Organisation: K. Hwkins, S. Sanchez, B. Trakhtenbrot, B. Gaensicke, M. Salvato, M. Eracleous, M. Ness, M. Kumari, L. Chao, D. Horta.

Publications

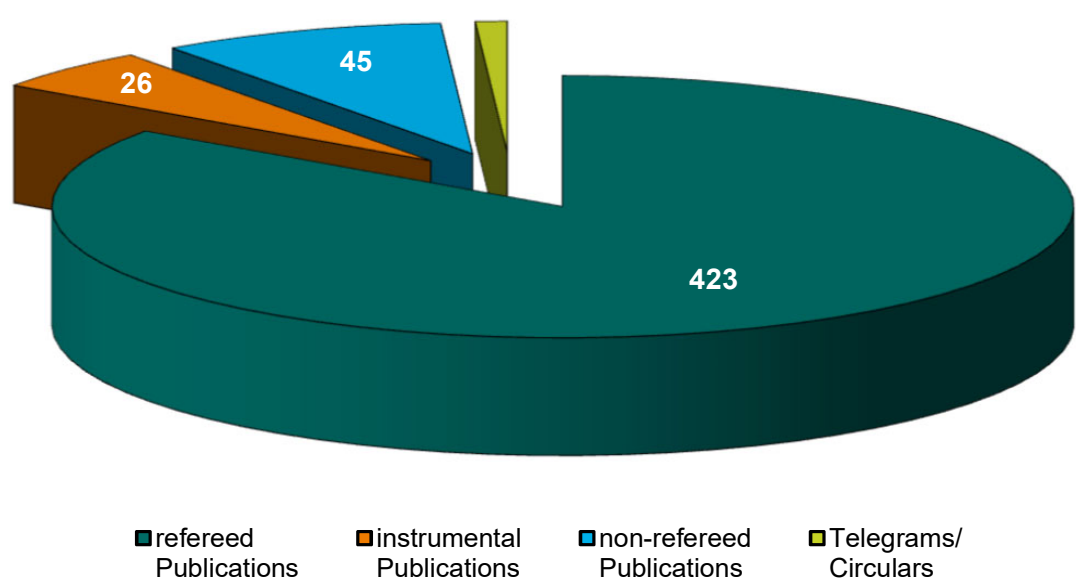
Here we present a tabular and graphical summary of our publication activities in 2023. The publications are counted by science group and publications type. The individual publications are listed consecutively.

Summary of MPE Publications in 2023

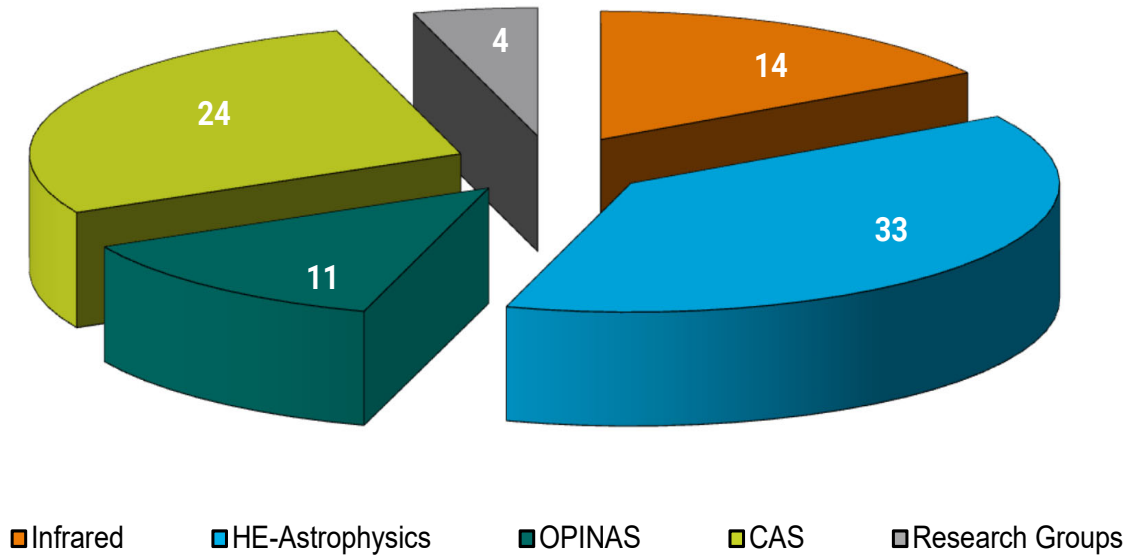
	Refereed Publications		Instrumental Publications		non-refereed Publications		Telegramms/ Circulars		Talks		Poster
	First Author	All	First Author	All	First Author	All	First Author	All	Invited/ Colloquium	All	Only First Author
IR	14	100	2	0	1	8	0	1	66	94	6
HE-Astro-physics	33	136	7	25	3	23	2	5	28	56	4
OPINAS	11	77	0	1	0	6	0	0	9	15	2
CAS	24	79	0	0	4	8	0	0	21	28	8
Re-search. Groups	4	31	0	0	0	0	0	0	17	28	0
Total	86	423	9	26	8	45	2	5	141	221	20

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.

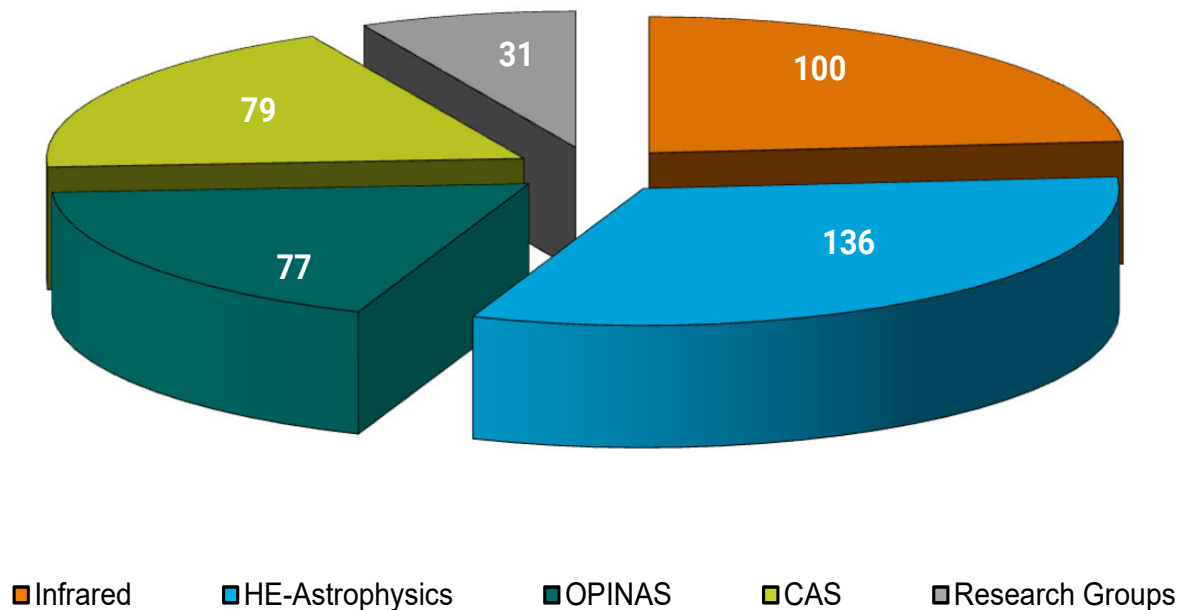
MPE Publications 2023 (by Type)



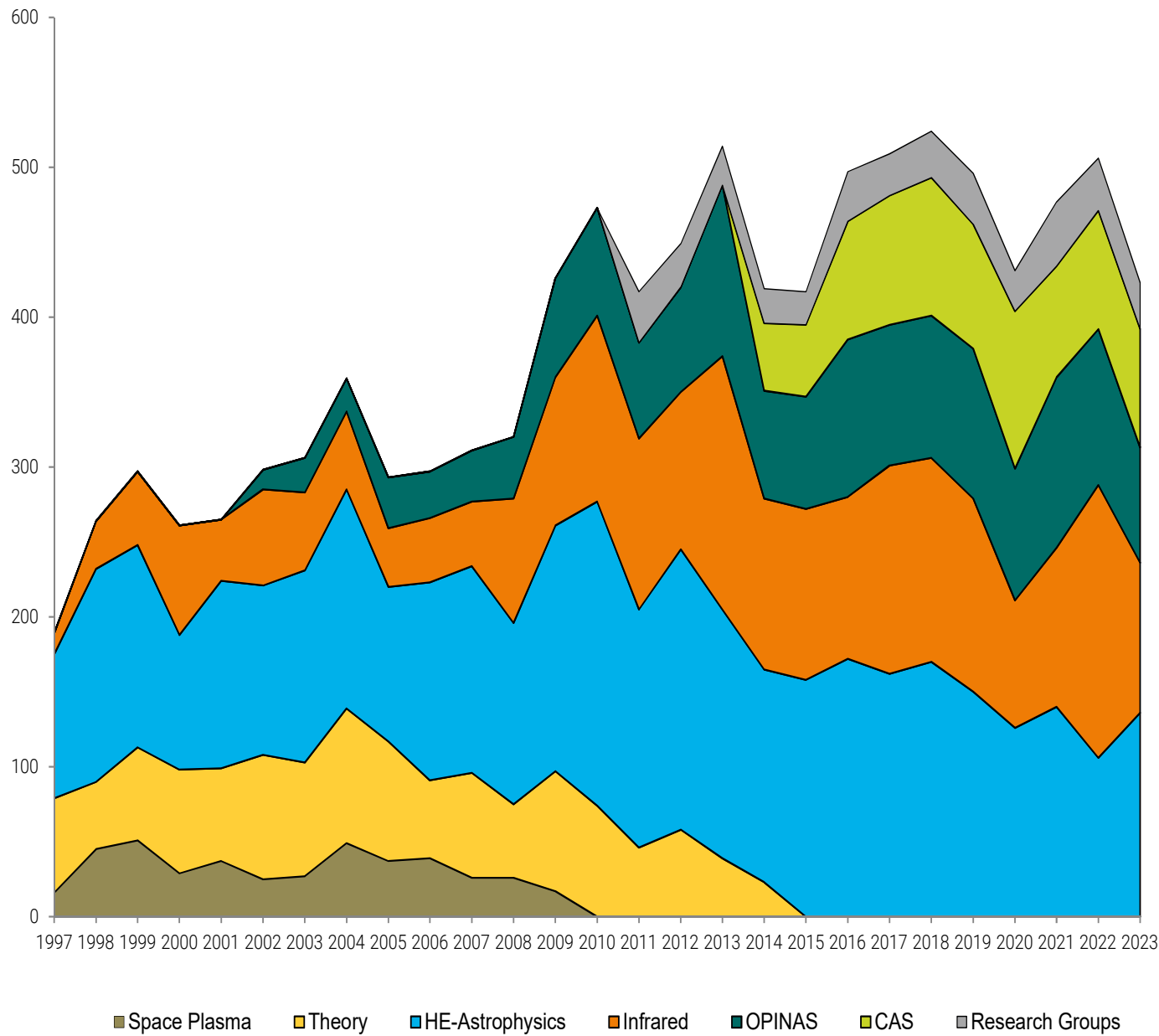
Refereed Publications with MPE first author in 2023 (by Science Group)



Total refereed MPE Publications in 2023 (by Science Group)



History of MPE Total Refereed Publications (by Science Group)



Refereed Publications

- Abbott T., M. Aguena, A. Alarcon, [...], T.N. Varga, J. Weller, DES, SPT Collaborations: Joint analysis of Dark Energy Survey Year 3 data and CMB lensing from SPT and Planck. III. Combined cosmological constraints. *Physical Review D* 107, 2 (2023).
- Abbott T., M. Aguena, A. Alarcon, [...], T.N. Varga, J. Weller, DES Collaboration: Dark Energy Survey Year 3 results: Constraints on extensions to Λ CDM with weak lensing and galaxy clustering. *Physical Review D* 107, 8 (2023).
- Abuter, R., GRAVITY Collaboration, R. Abuter, N. Aymar, P. Amaro Seoane, A. Amorim, M. Bauböck, J. P. Berger, H. Bonnet, G. Bourdarot, W. Brandner, V. Cardoso, Y. Clénet, R. Davies, P. T. de Zeeuw, J. Dexter, A. Drescher, A. Eckart, F. Eisenhauer, H. Feuchtgruber, G. Finger, N. M. Förster Schreiber, A. Foschi, P. Garcia, F. Gao, Z. Gelles, E. Gendron, R. Genzel, S. Gillessen, M. Hartl, X. Haubois, F. Haussmann, G. Heiße, T. Henning, S. Hippler, M. Horrobin, L. Jochum, L. Jocou, A. Kaufer, P. Kervella, S. Lacour, V. Lapeyrère, J.-B. Le Bouquin, P. Léna, D. Lutz, F. Mang, N. More, T. Ott, T. Paumard, K. Perraut, G. Perrin, O. Pfuhl, S. Rabien, D. C. Ribeiro, M. Sadun Bordoni, S. Scheithauer, J. Shangguan, T. Shimizu, J. Stadler, O. Straub, C. Straubmeier, E. Sturm, L. J. Tacconi, F. Vincent, S. von Fellenberg, F. Widmann, M. Wielgus, E. Wieprecht, E. Wozzerek and J. Woillez: Polarimetry and astrometry of NIR flares as event horizon scale, dynamical probes for the mass of Sgr A*. *Astron. Astrophys.* 677, L10 (2023).
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- Akimkin V., A.V. Ivlev, P. Caselli, M. Gong, K. Silsbee: Coagulation-Fragmentation Equilibrium for Charged Dust: Abundance of Submicron Grains Increases Dramatically in Protoplanetary Disks. *Ap. J.* 953, 1 (2023).
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Banzatti A., K.M. Pontoppidan, J.S. Carr, E. Jellison, I. Pascucci, J.R. Najita, C.E. Muñoz-Romero, K.I. Öberg, A. Kalyaan, P. Pinilla, S. Krijt, F. Long, M. Lambrechts, G. Rosotti, G.J. Herczeg, C. Salyk, K. Zhang, E.A. Bergin, N.P. Ballering, M.R. Meyer, S. Bruderer, Jdiscs Collaboration: JWST Reveals Excess Cool Water near the Snow Line in Compact Disks, Consistent with Pebble Drift. *Ap. J. Lett.* 957, 2 (2023).

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Books / Articles in Books

Bovino, S., T. Grassi, J. Holdship, I. Kamp, A. Lupi, C. Rab, D. Schleicher, and S. Viti: In Book: Astrochemical Modeling - Practical Aspects of Microphysics in Numerical Simulations.

(Eds.) S. Bovino, T. Grassi, Elsevier, Radarweg 29, PO Box 211, 1000 AE Amsterdam, Netherlands, p.365-398 (2023).

Herder, J.W.d., M. Feroci, N. Meidinger: Handbook of X-ray and Gamma-ray Astrophysics. (Eds.) C. Bambi, A. Santangelo, Springer Nature, Singapore, Singapore, p.1-48 (2023).

Ivlev, A.V., V. Akimkin, K. Silsbee, D. Wiebe: Astrochemical Modeling – Practical Aspects of Microphysics in Numerical Simulations. (Eds.) S. Bovino, T. Grassi, Elsevier, Radarweg 29, PO Box 211, 1000 AE Amsterdam, Netherlands, p.235-282 (2023).

Kamp, I., Galli, D., Rab, Ch.: In Book: Astrochemical Modeling – Practical Aspects of Microphysics in Numerical Simulations. (Eds.) Bovino, S., Grassi, T., Elsevier, Radarweg 29, PO Box 211, 1000 AE Amsterdam, Netherlands, p.283-306 (2023).

Ryan, J. M., W. Collmar: In Book: Handbook of X-ray and Gamma-ray Astrophysics. (Eds.) Cosimo Bambi, Andrea Santangelo, Springer Living Reference Work, Online, p.(2023).

Sanders, J., In Book: High-Resolution X-ray Spectroscopy. (Eds.) C. Bambi, J. Jiang, Springer, Singapore, p.173-207 (2023).

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Popular Scientific Publications

Gillessen, S.: Im Auftrag eines Genies. Rezension des Buchs „Der Ursprung der Zeit“, Spektrum der Wissenschaft vom 21.09.2023.

Gillessen, S.: Ist der Mensch Physik? Buchrezension zu „Mehr als nur Atome“, Spektrum der Wissenschaft vom 23.05.2023.

Gillessen, S.: Von uns und der Welt. Buchrezension zu „Der Ultimate Guide zu absolut allem“, Spektrum der Wissenschaft vom 08.05.2023.

Gillessen, S.: Zum Scheitern verurteilte Kommunikation. Buchrezension zu „Signale aus unserer Welt“, Spektrum der Wissenschaft vom 12.04.2023.

Gillessen, S.: Ausflug an die Grenzen des Kosmos. Buchrezension zu „Die Evolution des Universums“, Spektrum der Wissenschaft vom 27.03.2023.

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Telegrams / Circulars / Data Catalogues

Kozyrev, A. S., Golovin, D. V., Litvak, M. L., Mitrofanov, I. G., Sanin, A. B., Mgns/Bepicolombo Team, Hend/Mars Odyssey Team, Benkhoff, J., Bepicolombo Team, Hurley, K., IPN, Svinkin, D., Golenetskii, S., Frederiks, D., Ridnaia, A., Lysenko, A., Cline, T., Konus-Wind Team, von Kienlin, A., Zhang, X., Rau, A., Savchenko, V., Bozzo, E., Ferrigno, C., INTEGRAL SPI-ACS GRB Team, Barthelmy, S., Cummings, J., Krimm, H., Palmer, D., Tohuvavohu, A., Swift-Bat Team, Boynton, W., Fellows, C., Harshman, K., Enos, H., Starr, R., Gardner, A. S., GRS-Odyssey GRB Team: IPN triangulation of GRB 230209B, GCN Circ. 33323 (2023)

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Mailyan, B., von Kienlin, A., Meegan, C., and Fermi Gamma-ray Burst Monitor Team: GRB 230815A: Fermi GBM detection, GCN Circ. 34440 (2023)

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Poster

- Araki, M.: Millimeter and submillimeter spectroscopy of the deuterated molecular ion SD+. Laboratory Astrophysics in the Age of ALMA and JWST, Max-Planck-Institut für Kernphysik, Virtual Meeting, Heidelberg, Germany, 09/2023.
- Correa, C. M.: Cosmic voids as cosmological laboratories. Euclid Consortium Meeting 2023, Copenhagen, Denmark, 06/2023.
- Gieser, C.: Unveiling the physical properties during high-mass star formation with ALMA and NOEMA from infrared dark clouds to ultra-compact HII regions. Protostars and Planets VII, Kyoto, Japan, 04/2023.
- Jolly, JB: ALMA Lensing Cluster Survey: Dust mass and cosmic dust mass density evolution with redshift, from $z=1$ to $z>5$. EAS annual meeting, Virtual Meeting, Krakow, Poland, 07/2023.
- Jusko, P.: Cryogenic rf 22 Pole Ion Trap with 5 Ring Electrodes for Astrochemical Studies – CCIT. Lorentz Center workshop: New directions in cold and ultracold chemistry, Leiden, Netherlands, 05/2023.
- Jusko, P.: IR-PD spectroscopy of cation and anion PAH systems containing a 5-member ring using weakly bound tag at cryogenic temperatures. FELIX User meeting/ Radboud University/ FELIX-HFML, Nijmegen, Netherlands, 06/2023.
- Khokhriakova, A.: Searching for X-Ray Counterparts of Degree Wide TeV Halos Around Middle-Aged Pulsars with eROSITA. THE X-RAY UNIVERSE 2023 / XMM-Newton Science Operations Centre, Athens, Greece, 06/2023.
- Lee, L.: Resolving kinematics of typical main-sequence star-forming galaxies at $4 < z < 6$ in CRISTAL. Shedding New Light on the First Billion Year of the Universe, Marseille, France, 07/2023.
- Pastras, S.: Gas flows in realistic models of barred galaxies. Galactic bars: driving and decoding galaxy evolution, Granada, Spain, 07/2023.
- Pulsoni, C.: The specific angular momentum of ETGs and its relation with stellar mass. EAS Annual Meeting 2023, Virtual Meeting, Krakow, Poland, 07/2023.
- Redaelli, E.: The core population and kinematics of a massive clump. Fifth Workshop on Millimetre Astronomy in Italy, Bologna, Italy, 06/2023.
- Redaelli, E.: Insights on nitrogen chemistry. IAU KAVLI meeting, Traverse City, Michigan, USA, 07/2023.
- Ribeiro, D.: 1PN Order at a time: an efficient formula for expanding metrics in GR. Galactic Center Workshop 2023, Granada, Spain, 04/2023.
- Roster, William Roster: Photo-z for eROSITA via Deep Learning. EAS, Virtual Meeting, Krakow, Poland, 07/2023.
- Sadun Bordoni, M: The extended mass distribution in the Galactic center. Galactic Center Workshop, Granada, Spain, 04/2023.
- Stanke, T.: Molecular clouds roasted by starburst clusters. The physics of star formation. From Stellar cores to galactic scales/University Lyon, Lyon, France, 06/2023.
- Stanke, T.: ALCOHOLS: APEX Large CO Heterodyne Orion Legacy Survey. Science with the Atacama Pathfinder Experiment (APEX)/MPIfR Bonn, Ringberg, Germany, 01/2023.
- Tikhonenko I., D. Zakharova, N.Y. Sotnikova, A. Smirnov: B/PS bulges and barlenses from the kinematic viewpoint. Galactic Bars: Driving and Decoding Galaxy Evolution, Granada, Spain, 07/2023.
- Valdivia, M. T.: Rivers in the sky: Streamers toward two embedded sources in Perseus. Chemical processes in solar-type star-forming regions, Toulouse, France, 06/2023.
- Valdivia Mena, M. T.: Rivers in the sky: streamers toward two embedded protostars in Perseus. Protostars and Planets VII, Kyoto, Japan, 04/2023.

Talks

Araki, M.: Polarization dependence of superradiant mirror for cavity spectroscopy: Preliminary report. Contributed Talk, Users Meeting of Cavity Spectroscopy, Wako, Saitama, Japan, 12/2023.

Boller, Th.: eROSITA discovery of ultra-soft variability in the NLS1 1H 0707-495. Invited Talk, Multifrequency Behaviour of High Energy Cosmic Sources - XIV / Palermo, Palermo, Italy, June 2023.

Boller, Th.: Die wahre Geschichte des Sterns von Bethlehem. Public Talk, Volkshochschule Neufahrn, Neufahrn bei Freising, Germany, 12/2023.

Bourdarot, G.: The inner disk structure of FU Orionis. Contributed Talk, The inner disk of young stars : accretion, ejection, and planet formation, Cargèse, France, 09/2023.

Bourdarot, G.: Astrometric detection of planets around M-dwarfs with GRAVITY. Contributed Talk, exoGRAVITY workshop, Heidelberg, Germany, 11/2023.

Bourdarot, G.: GRAVITY+: a new window on star and planet formation. Contributed Talk, GRAVITY YSO workshop, Heidelberg, Germany, 11/2023.

Burwitz, V.: Characterising x-ray optics at PANTER for the NewATHENA mission and x-ray optic test facilities. Contributed Talk, SPIE, San Diego, USA, 08/2023.

Burwitz, V.: AHEAD2020: development and testing X-ray optics. Invited Talk, AXRO, Prague, Czech Republic, 12/2023.

Cao, Y.: VLT/GRAVITY interferometric observations of the innermost hot dust structure around AGN. Contributed Talk, EAS 2023 Annual Meeting, Krakow, Poland, 07/2023.

Caselli, P.: Astrochemistry at the dawn of star and planet formation. Colloquium, GDCh Kolloquium at the Gesellschaft Ortsverband Goettingen, Institut fuer Physikalische Chemie, Göttingen, Germany, 01/2023.

Caselli, P.: From clouds to planets: the astrochemical link. Colloquium, University of Vienna, Department of Astrophysics, Vienna, Austria, 01/2023.

Caselli, P.: Our Astrochemical Origins. Colloquium, Institute of Astronomy, Cambridge University, Cambridge, UK, 03/2023.

Caselli, P.: Our Astrochemical Origins. Colloquium, Kapteyn Astronomical Institute, University of Groningen, Groningen, The Netherlands, 03/2023.

Caselli, P.: Molecular Fractionation in Star- and Planet-forming regions. Colloquium, Academia Sinica Institute of Astronomy and Astrophysics (ASIAA), Taipei, Taiwan, 05/2023.

Caselli, P.: Our Astrochemical Origins. Invited Talk, Plenary talk at the 2023 ASROC (Assembly of the Astronomical Society of the Republic of China) Annual Meeting, Natio-

nal Sun Yat-sen University, Kaohsiung, May 19-21 https://www.asroc.org.tw/asroc2023/index_e.php, Kaohsiung, Taiwan, 05/2023.

Caselli, P.: The Astrochemical Link from Clouds to Planets: a Dusty Tale. Invited Talk, Illuminating the Dusty Universe: A Tribute to the Work of Bruce Draine, October 30 - November 3, 2023, Florence, Italy, 11/2023.

Caselli, P.: Noi, polvere di stelle. Public Talk, GEFALCO Tutti i Paesi del Mondo, GEFALCO, Italy, 04/2023.

Caselli, P.: Our Astrochemical Origins - Career Talk. Public Talk, MPE Girls Day, Garching, Germany, 04/2023.

Comparat, J.: X-ray emissions from the large scale structure of the Universe. Invited Talk, The Multiphase Circumgalactic Medium conference, Ringberg Castle, Germany, 02/2023.

Comparat, J.: X-ray emissions from the large scale structure of the Universe with an eROSITA & 4MOST focus. Colloquium, Grenoble, France, 04/2023.

Comparat, J.: X-ray emissions from the large scale structure of the Universe. Colloquium, Garching bei München, Germany, 01/2023.

Comparat, J.: Empirical models of the large scale structure seen in X-ray. Contributed Talk, Garching bei München/Oxford, UK, 11/23.

Comparat, J.: BHM-clusters and SDSS-V program. Contributed Talk, New-York, US, 07/23.

Comparat, J.: The cosmic web of X-ray AGN. Contributed Talk, Australian + eROSITA workshop, Online, Germany and Australia, 03/2023.

Conversi, L.: NEOMIR: an NEO early-warning, space-based mission. Contributed Talk, 2nd NEO and Debris Detection Conference, Darmstadt, Germany, 01/2023.

Correa, C. M.: Cosmic voids as cosmological laboratories. Colloquium, LMU Physical Cosmology Seminar, Munich, Germany, 06/2023.

Correa, C. M.: Cosmic voids as cosmological laboratories. Contributed Talk, Cosmology from Home, 07/2023.

Correa, C. M.: Redshift-space effects in voids and their impact on cosmological tests. Colloquium, Euclid Voids Working Package Presentation, 07/2023.

Correa, C. M.: The Popcorn void finder and its application to cosmological tests. Contributed Talk, Cambridge-LMU Cosmology Meeting, Munich, Germany, 12/2023.

Davies, R.: MICADO, the first light ELT camera. Colloquium, Padova, Italy, 03/2023.

Davies, R.: The innermost hot dust in AGN as seen by GRAVITY. Contributed Talk, Multi-wavelength AGN Structure and Cosmological Applications, Nice, France, 10/2023.

Dennerl, K.: SRG/eROSITA and the first ever clear view

of the soft diffuse X-ray sky. Contributed Talk, The X-ray Universe 2023, Athens, Greece, 06/2023.

Dennerl, K.: SRG/eROSITA and the first ever clear view of the soft diffuse X-ray sky. Contributed Talk, 14th International Workshop On Astronomical X-ray Optics (AXRO 2023), Prague, Czech Republic, 12/2023.

Dennerl, K.: The energy calibration of eROSITA. Contributed Talk, 15th IACHEC meeting, Pelham, Germany, 04/2023.

Dennerl, K.: eROSITA calibration updates. Contributed Talk, 20th German eROSITA Consortium meeting, Garching, Germany, 05/2023.

Drescher, A.: Flares as Event Horizon scale dynamical probes for the mass of Sgr A*. Contributed Talk, Galactic Center Workshop 2023, Granada, Spain, 04/2023.

Drescher, A.: Flares as dynamical probes for the mass of Sgr A*. Contributed Talk, Fundamental Physics at the Galactic Center, Porto, Portugal, 12/2023.

Drescher, A.: The inner 250 mas of Sgr A* with GRAVITY. Invited Talk, Astrophysics seminar at the Institute for Theoretical Physics and Astrophysics, Uni Würzburg, Würzburg, Germany, 11/2023.

Drescher, A.: GRAVITY und das Schwarze Loch im Zentrum der Milchstraße. Public Talk, Garching, Germany, 11/2023.

Drescher, A.: Flares as event horizon scale dynamical probes for the mass of Sgr A*. Contributed Talk, IR Group Retreat, Ringberg Castle, Germany, 05/2023.

Eisenhauer, F.: Beyond GRAVITY. Invited Talk, Fundamental Physics at the Galactic Center, Porto, Portugal, 12/2023.

Eisenhauer, F.: Astronomy at Highest Angular Resolution Adaptive Optics Interferometry and Black Holes. Colloquium, University of Oxford, Astrophysics Colloquium, Oxford, United Kingdom, 11/2023.

Eisenhauer, F.: Astronomy at Highest Angular Resolution Adaptive Optics, Interferometry and Black Holes. Colloquium, Max Planck Institute for Radio Astronomy, Bonn, Germany, 10/2023.

Eisenhauer, F.: Astronomy at Highest Angular Resolution Adaptive Optics, Interferometry and Black Holes. Invited Talk, Annual Meeting of the German Astronomical Society, Berlin, Germany, 09/2023.

Eisenhauer, F.: Next Generation Interferometry with GRAVITY+. Colloquium, Observatoire de Paris – Meudon, Paris, France, 07/2023.

Eisenhauer, F.: GRAVITY and The Galactic Center Black Hole. Invited Talk, The 11th VLTI Interferometry School, Budapest, Hungary, 06/2023.

Eisenhauer, F.: Astronomy at Highest Angular Resolution Adaptive Optics, Interferometry and Black Holes. Colloquium, Physics Colloquium, Tel Aviv University, Tel Aviv, Israel, 05/2023.

Eisenhauer, F.: GRAVITY(+) – Optical / IR Interferometry

and Black Holes. Colloquium, IRAM, Grenoble, France, 04/2023.

Eisenhauer, F.: Astronomy at Highest Angular Resolution Adaptive Optics, Interferometry and Black Holes. Colloquium, University of Concepción, Concepción, Chile, 03/2023.

Eisenhauer, F.: Lessons learned – from GRAVITY, and SINFONI, ERIS, G+. Colloquium, European Southern Observatory, Garching, Germany, 03/2023.

Eisenhauer, F.: GRAVITY, SINFONI, and the Black Hole in the Center of the Milky Way. Colloquium, European Southern Observatory, ESO Paranal Observatory, Chile, 01/2023.

Eisenhauer, F.: GRAVITY, SINFONI, and the Black Hole in the Center of the Milky Way. Colloquium, European Southern Observatory, Santiago, Chile, 01/2023.

Eisenhauer, F.: Immer größer, immer schärfer – Teleskope, unser Fenster zum Universum. Invited Talk, Deutsches Museum, Munich, Germany, 01/2023.

Erwin, P.: Bars in the Local Universe: An Observational Perspective. Invited Talk, Galactic Bars: Driving and Decoding Galaxy Evolution Conference, Granada, Spain, 07/2023.

Forster Schreiber, N. M.: Star-Forming Galaxies at Cosmic Noon (and Beyond). Colloquium, Department of Astronomy, University of Concepcion, Concepcion, Chile, 04/2023.

Forster Schreiber, N. M.: Galaxy Evolution across Cosmic Time. Invited Talk, WE Heraus - EAS Early Career Researchers in Astronomy Workshop, Garching, Germany, 02/2023.

Forster Schreiber, N. M.: Baryon-dominated disk galaxies at high redshift. Invited Talk, Milky Way research: connecting the near and far field, Paris, France, 10/2023.

Forster Schreiber, N. M.: Star-forming galaxies at cosmic noon and beyond. Invited Talk, Plenary Lecture at The 16th Hellenic Astronomical Conference, Athens, Greece, 06/2023.

Forster Schreiber, N. M.: Kpc-scale kinematics, star formation, and ISM properties from cosmic noon to $z \sim 6$. Invited Talk, The Growth of Galaxies in the Early Universe - VIII, Sesto, Italy, 03/2023.

Genzel, R.: Schwarze Löcher und Galaxien. Talk and Discussion with students, Nymphenburger Gymnasium, Munich, Germany, 01/2023.

Genzel, R.: Near Event Horizon Dynamics of Stars, Gas and Photons in the Galactic Center. Invited Talk (remote), Ramon Conference on Black Holes, Tel Aviv, Israel, 02/2023.

Genzel, R.: A 40-Year Journey. distinguished lecture, Invited Talk (remote), Hong Kong Polytechnic University, Hong Kong, 02/2023.

Genzel, R.: A 40-Year Journey. Invited Talk (remote), X-VISION 2023 Workshop, North-West University of Pot-

chefstroom, South Africa, 02/2023.

Genzel, R.: Vorstellung des MPE und seiner Forschungsprojekte. Invited Talk, Visit of the BVMW delegation at Max-Planck-Institute for Extraterrestrial Physics, Garching, Germany, 02/2023.

Genzel, R.: 60 Years of ESO in Germany. Invited Talk, ESO Day, Max-Planck-Institute for Extraterrestrial Physics, Garching, Germany, 02/2023.

Genzel, R.: Galaxien und schwarze Löcher. Invited Talk, X-Lab Science Festival, Göttingen, Germany, 03/2023.

Genzel, R.: Reimar Lüst – Vater des MPE. Die Entwicklung seines Instituts über fast 60 Jahre, Invited Talk, Festsymposium 100. Geburtstag Reimar Lüst, Max-Planck-Institute for Extraterrestrial Physics, Garching, Germany, 03/2023

Genzel, R.: A 40-Year Journey. Invited Talk, Bologna Easter Lecture, National Institute for Astrophysics (INAF), Bologna, Italy, 03/2023.

Genzel, R.: Galaxies and Black Holes. Invited Talk (remote), COEFIS XV Workshop, University of La Laguna, the Canary Islands, Spain, 04/2023.

Genzel, R.: A 40-Year Journey. Invited Talk, Bernhard Bolzano Lecture of the Learned Society, Charles University, Prague, Czech Republic, 04/2023.

Genzel, R.: Galaxies and Black Holes. Invited Talk at Charles University, Prague, Czech Republic, 04/2023.

Genzel, R.: Opening Speech. Invited Talk, Galactic Center Workshop, Granada, Spain, 04/2023.

Genzel, R.: Galaxies and Black Holes – A 40-Year Journey. Invited Public Talk, Galactic Center Workshop, Granada, Spain, 04/2023.

Genzel, R.: A 40-Year Journey. Invited Talk, Physics Colloquium at Tel Aviv University, Tel Aviv, Israel, 04/2023.

Genzel, R.: Galaxies and Black Holes. Invited public Talk, Tel Aviv University, Tel Aviv, Israel, 05/2023.

Genzel, R.: A 40-Year Journey. Invited Talk, Astrophysics Seminar, Hebrew University Jerusalem (HUJ), Jerusalem, Israel, 05/2023.

Genzel, R.: Testing the Black Hole Paradigm in the Galactic Center with Infrared Interferometry. Invited Talk, colloquium, Israel Institute of Technology (Technion), Haifa, Israel, 05/2023.

Genzel, R.: Testing the Massive Black Hole Paradigm in the Galactic Center. Invited Talk, Black Hole and Gravitational Wave Day, Max-Planck-Institute for Astrophysics, Garching, Germany, 05/2023.

Genzel, R.: Updates and an Outline for the Future, State of the Union. Colloquium, Ringberg Retreat of the IR-/Submm.-Group, Ringberg, Tegernsee, Germany, 05/2023.

Genzel, R.: Galaxies and Black Holes. Invited Talk, Como, Italy, 05/2023.

Genzel, R.: A 40-Year Journey. Invited public Talk, Jornadas Astronómicas de Almería, Almería, Spain, 05/2023.

Genzel, R.: The formation and evolution of star-forming galaxies. Invited Talk, remote, From the Galaxy to the Big Bang Conference, Banjuls-sur-mer, France, 06/2023.

Genzel, R.: Galaxien und Schwarze Löcher. Invited Talk (remote) for students of the Lessing Gymnasium, Mannheim, Germany, 06/2023.

Genzel, R.: The formation and evolution of star-forming galaxies. Invited Talk, Star@Lyon Conference, Lyon, France, 06/2023.

Genzel, R.: Galaxies And Massive Black Holes. Invited Talk, EAS Annual Conference, Krakow, Poland, 07/2023.

Genzel, R.: Testing the Massive Black Hole Paradigm in the Galactic Center. Invited Talk, NAOJ, Mitaka, Japan, 07/2023.

Genzel, R.: Galaxies and Black Holes. A 40-Year Journey. Invited Talk, Honoris Causa Ceremony, Université Grenoble Alpes, Grenoble, France, 10/2023.

Genzel, R.: Presentation of the Awards 2023. Invited Talk, SHAW Prize, Award Ceremony, Hong Kong, 11/2023.

Genzel, R.: A 40-year journey. Invited Talk, Plenary Session, Laureate, Hong Kong, 11/2023.

Genzel, R.: Eine Vierzigjährige Reise: Initialzündung. Invited Talk, TU Dortmund, Germany, 11/2023.

Genzel, R.: Status & Prospects for Experimental Studies of Black Holes. Invited Talk, Fundamental Physics at the Galactic Centre, Porto, Portugal, 12/2023.

Genzel, R.: Das Deutsche Zentrum für Astrophysik (DZA). Colloquium, MPA-MPE Kuratorium, Garching, Germany, 12/2023.

Genzel, R.: Understanding Mathematics and Physics. Invited Talk (remote), University of Valencia, Spain 12/2023.

Gieser, C.: JWST Observations of Young Protostars (JOYS): A multi-wavelength high-resolution characterization of the warm and cold gas and dust toward a high-mass star-forming region. Contributed Talk, European Astronomical Society Annual Meeting, Karkow, Poland, 07/2023.

Gillessen, S.: General relativistic effects around the Galactic Center black hole. Invited Talk, 57th Rencontres de Moriond 2023, La Thuile, Italy, 03/2023.

Gillessen, S.: GRAVITY results on Sgr A*. Invited Talk, GALACTIC CENTER WORKSHOP, Granada, Spain, 04/2023.

Gillessen, S.: MICADO in the Galactic Center. Contributed Talk, MICADO Science Meeting, Padova, Italy, 10/2023.

Gillessen, S.: General relativistic effects around the Galactic Center black hole. Colloquium, Milano, Italy, 11/2023.

Gillessen, S.: Kepler, Einstein und das Schwarze Loch im Zentrum der Milchstraße. Public Talk, Stuttgart, Germany, 11/2023.

Gillessen, S.: From GRAVITY to GRAVITY+: Towards IMBHs and the spin. Contributed Talk, San Pedro, Belize, 12/2023.

- Grant, S.: First results from the JWST MINDS program: Unlocking the composition in the inner 10 au of protoplanetary disks. Colloquium, Munich, Germany, 01/2023.
- Grant, S.: Probing gas composition and conditions in the inner au of protoplanetary disks: the first year of JWST-MIRI data from the MINDS team. Contributed Talk, Baltimore, United States, 09/2023.
- Grassi, T.: Modelling microphysics, ambipolar diffusion, chemistry, and cosmic rays in MHD shocks (and more). Invited Talk, Magnetohydrodynamical flows in young circumstellar disks, Ringberg, Germany, 10/23.
- Grassi, T.: Time-dependent Thermochemical Modelling of Wind-launching Disk Regions. Contributed Talk, Congresso Nazionale di Astrochimica (Proto-)Planetaria, Trieste, Italy, 09/2023.
- Grassi, T.: Microphysics (abridged). Invited Talk, Radiation Transport in Astrophysics, Flatiron Institute, New York City, NY, United States, 12/2023.
- Haberl, F.: eROSITA and the Magellanic System. Contributed Talk, The X-ray Universe 2023, Athens, Greece, 06/2023.
- Haberl, F.: X-ray surveys of the Large Magellanic Cloud - from Einstein observatory to eROSITA. Invited Talk, Stellar Feedback in the ISM, Ensenada, Mexico, 12/2023.
- Haerendel, G.: Excitation and Absorption of Alfvén Waves on the Sun and at Earth: A Comparison. Invited Talk, Chapman Conference "Advances in Understanding Alfvén Waves across Heliophysics", Berlin, Germany, 06/2023.
- Honniball, C.: Lunar Observations from 5 to 8 Microns with SOFIA and the Suomi Cross-Track Infrared Sounder: Water and Christiansen Feature Results. Contributed Talk, 54th Lunar and Planetary Science Conference, The Woodlands, Texas, USA, 03/2023.
- Kaltenbrunner, D.: The population of high-mass X-ray binaries in the LMC detected during the first eROSITA all-sky survey. Contributed Talk, The X-ray Universe 2023, Athens, Greece, 06/2023.
- Kravchenko, K.: First on-sky results of ERIS at VLT. Contributed Talk, European Astronomical Society Annual Meeting, Krakow, Poland, 07/2023.
- Kravchenko, K.: First on-sky results of ERIS at VLT. Invited Talk, Seminar, remote, remote, 03/2023.
- Lee, L.: The CRISTAL survey: Resolving kinematics of typical main-sequence star-forming galaxies at $4 < z < 6$. Contributed Talk, Resolving the Extragalactic Universe with ALMA & JWST, Tokyo, Japan, 11/2023.
- Lutz, D.: The sub-parsec structure of AGN with VLTI / GRAVITY. Contributed Talk, IAUS 378: Black Hole winds at all scales, Haifa, Israel, 03/2023.
- Mang, F.: Discovering faint stars around SgrA* with GRAVITY and G^AR. Contributed Talk, Galactic Center Workshop, Granada, Spain, 04/2023.
- Mang, F.: Ever sharper, ever deeper - tracking closed stellar orbits in the Galactic Center with unprecedented precision. Contributed Talk, Fundamental Physics at the Galactic Center, Porto, Portugal, 12/2023.
- Merloni, A.: The eROSITA All-Sky Survey: revealing exotic nuclear transients. Invited Talk, Getting ready to descend the slippery slope of multimessenger black hole data, Sexten, Italy, 01/2023.
- Merloni, A.: eROSITA on SRG: Mapping the Hot Universe. Colloquium, Caltech Colloquium, Pasadena, CA, United States, 03/2023.
- Merloni, A.: eROSITA on SRG: Mapping the Hot Universe. Colloquium, Bonn University Colloquium, Bonn, Germany, 05/2023.
- Merloni, A.: AGN variability with eROSITA on SRG. Invited Talk, The restless nature of AGN, Naples, Italy, 06/2023.
- Merloni, A.: Discovering exotic nuclear transients in X-rays. Invited Talk, EAS Special Session: "Gravitational Wave sources in gaseous environments", Krakow, Poland, 07/2023.
- Merloni, A.: The Black Hole Mapper. Invited Talk, SDSS-V Collaboration Meeting, New York, NY, United States, 07/2023.
- Möller, J. P.: Qualification Level Testing of Graphene Thermal Straps for the use on the WFI Instrument. Contributed Talk, European Space Thermal Engineering Workshop 2023, Noordwijk, Netherlands, 10/2023.
- Müller, T.: A holistic (thermal) view of the Hayabusa2 mission targets. Contributed Talk, Hayabusa2 Science Team meeting, Tokyo, Japan, 11/2023.
- Müller, T.: Radiometric Size, Distance and Orbit Constraints for Unknown Asteroids Seen in JWST MIRI Images. Contributed Talk, Asteroid, Comets, Meteors Conference, Flagstaff, USA, 06/2023.
- Müller, T.: Modelling the Microwave Radiation of the Moon. Contributed Talk, Fourth Joint GSICS/IVOS Lunar Calibration Workshop, Darmstadt, Germany, 12/2023.
- Müller, T.: The Moon at thermal infrared wavelengths: Comparison between NOAA/MetOp-A/MetOp-B, TIROS-N HIRS measurements and thermophysical model predictions. Contributed Talk, Fourth Joint GSICS/IVOS Lunar Calibration Workshop, Darmstadt, Germany, 12/2023.
- Müller, T.: Modelling of Ryugu's remote and in-situ thermal measurements. Contributed Talk, Thermal Models for Planetary Science IV, Noordwijk, The Netherlands, 04/2023.
- Nandra, K.: Population studies of AGN with eROSITA. Invited Talk, AHA Meeting, Miami, USA, 12/2023.
- Nandra, K.: New Results on Astrophysical Black Holes from eROSITA. Invited Talk, Astrophysical Black Holes: A Rapidly Moving Field, Hongkong, China, 06/2023.
- Nandra, K.: eROSITA: Status and Latest Results. Invited Talk, 20th Divisional Meeting of HEAD, Waikola, Hawaii, USA, 03/2023.

Predehl, P.: The X-ray bubbles at the Galactic Center and their connection to outflows. Invited Talk, Galactic Center Workshop, Granada, Spain, 04/2023.

Predehl, P.: The X-ray Bubbles at the Galactic Center. Invited Talk, AXRO, Prague, Czech Republic, 12/2023.

Rab, Ch.: Circumplanetary Disks (also with JWST). Invited Talk, EAS, Kraków, Poland, 07/2023.

Rab, Ch.: From protoplanetary to planet-forming disks. Colloquium, TLS Tautenburg, Tautenburg, Germany, 06/2023.

Rab, Ch.: Synthetic observables of disk winds. Invited Talk, Core2Disks III, Orsay, France, 10/2023.

Rabien, S.: Adaptive Membrane Mirrors for Large Deployable Space Telescopes. Contributed Talk, ESA WITSO 2023, Noordwijk, Netherlands, 11/2023.

Ramos-Ceja, M. E.: eROSITA instrument: performance and status. Contributed Talk, eROSITA instrument: performance and status, Pelham, Germany, 04/2023.

Ramos-Ceja, M. E.: El Universo visto en rayos X (Spanish). Public Talk, Semana Mundial del Universo / Tecnológico Superior de Morelia, Online, Mexico, 10/2023.

Rau, A.: Tidal Disruption Events with eROSITA and XMM-Newton. Contributed Talk, X-ray Universe 2023, Athens, Greece, 06/2023.

Rau, A.: WFI Update. Contributed Talk, X-IFU Consortium Meeting 2023, remote, remote, 06/2023.

Rau, A.: WFI Update. Contributed Talk, X-IFU Consortium Meeting #17, remote, remote, 11/2023.

Redaelli, E.: Light deuterated molecules: the APEX-ALMA synergy. Contributed Talk, APEX2023 meeting, Ringberg Castle, Germany, 01/2023.

Redaelli, E.: Molecules as probes of the star-formation process. Colloquium, IvS Ad Valvas Seminar, KU Leuven, Leuven, Belgium, 01/2023.

Redaelli, E.: Nitrogen fractionation in low-mass star-forming regions. Contributed Talk, Il Congresso Nazionale di Astrochimica (Proto-)Planetaria, Trieste, Italy, 09/2023.

Redaelli, E.: Measuring the ionisation rate in the dense ISM. Invited Talk, Core2Disk III, Saclay, France, 09/2023.

Redaelli, E.: Molecules as probes of star formation. Colloquium, Star and planet formation seminar, Garching, Germany, 10/2023.

Ribeiro, D.: The Black Hol(e)der Understanding gravity with Sgr A*. Colloquium, Fundamental Physics at the Galactic Centre, Porto, Portugal, 12/2023.

Ribeiro, D.: Flares from SgrA* Dynamical probes for strong gravitational and magnetic fields. Contributed Talk, XVI Black Hole Workshop, Porto, Portugal, 12/2023.

Roster, William Roster: Photo-z for eROSITA via Deep Learning. Invited Talk, SDSS, New York, USA, 08/2023.

Roster, William Roster: Photo-z for eROSITA via Deep Learning. Colloquium, Visited the working group, Edinburgh, Scotland, 11/2023.

Sadun Bordoni, M: GRAVITY Collaboration: Probing the gravitational potential around Sagittarius A* with stellar orbits. Contributed Talk, XVI Black Holes Workshop, Porto, Portugal, 12/2023.

Sadun Bordoni, M: GRAVITY Collaboration: Probing the gravitational potential around Sagittarius A* with stellar orbits. Contributed Talk, Fundamental Physics at the Galactic center, Porto, Portugal, 12/2023.

Salvato, M.: eROSITA and the synergy with UVEX. Invited Talk, UVEX2023, Pasadena, California (USA), 03/2023.

Salvato, M.: eROSITA on SRG: Insights on the hot and energetic Universe. Invited Talk, X-Ray Universe, Athens, Greece, June 2023.

Salvato, M.: eROSITA insights on the hot and energetic Universe. Invited Talk, Institute Colloquium, Tautenburg, Germany, May 2023.

Salvato, M.: eROSITA insights on the hot and energetic Universe. Invited Talk, Steward Observatory / NSF's NOURLab Joint Colloquium, Tucson, Arizona, USA, March 2023.

Salvato, M.: eROSITA AGN: an Update. Contributed Talk, SSDS-V Collaboration Meeting, New York, USA, August 2023.

Salvato, M.: Photometric Redshift for AGN in the LSST era. Invited Talk, LSST@europa5, Porec, Croatia, September 2023.

Salvato, M.: Multiwavelength Identification of AGN Identification (in the era of Euclid). Contributed Talk, ISSI Workshop „Active Galactic Nuclei in Next Generation Surveys“, Bern, Switzerland, November 2023.

Salvato, M.: From Earth to the end of Universe (unimaginable size and distances). Invited Talk, Elementary School, Albignasego, Padova, Italy, December 2023.

Salvato, M.: Impact of Research in everyday life. Invited Talk, Elementary School, Albignasego, Padova, Italy, December 2023.

Sanchez, A.: European Astronomical Society Annual Meeting 10 July – 14 July 2023 Kraków, Poland. Invited Talk, European Astronomical Society Annual Meeting. Genuine precision cosmology from LSS observations, Kraków, Poland, 07/2023.

Sanchez, A.: Evolution mapping: an approach to describe the non-linear density field. Invited Talk, DESI Research Forum, Virtual, Virtual, 09/2023.

Sanchez, A.: Evolution mapping: an approach to describe the non-linear density field. Invited Talk, 4th Regional Extragalactic Astronomy Meeting: 60 Years Of The Sersic Law, Cordoba, Argentina, 07/2023.

Sanders, J.: The first eROSITA survey view of galaxy clusters and more. Colloquium, University of Sussex, Brighton, UK, 12/2023.

Sanders, J.: The eROSITA sky survey and its first data re-

lease. Invited Talk, EAS 2023, Krakow, Poland, 07/2023.

Sanders, J.: Results from the eROSITA sky survey and its first data release. Contributed Talk, NAM 2023, Cardiff, UK, 07/2023.

Sanders, J.: Flux comparisons between eROSITA and Chandra for SPT-selected galaxy clusters. Contributed Talk, IACHEC 2023, Seeblick Pelham, Germany, 04/2023.

Santos, D. J. D.: Resolving the BLR with VLT/IRISA. Contributed Talk, The Restless Nature of AGN: 10 years later, Napoli, Italy, 06/2023.

Saraf, A.: WFI Large Detector Quadrant Thermal Cycling Test. Contributed Talk, European Space Thermal Engineering Workshop 2023, Noordwijk, Netherlands, 10/2023.

Saulder, C.: Cluster finding in spectroscopic surveys and DESI. Colloquium, Lawrence Berkeley National Laboratory, Berkeley, United States of America, 11/2023.

Saulder, C.: Spectroscopic cluster finding and the Coma Cluster in SV3. Contributed Talk, DESI July 2023 Hybrid Collaboration Meeting July 17-21, Durham, United Kingdom, 07/2023.

Saulder, C.: Status of the DESI peculiar velocity survey. Colloquium, Institute for Astronomy, University of Hawaii, Honolulu, United States of America, 12/2023.

Saulder, C.: First Detection of the BAO Signal from Early DESI Data. Contributed Talk, Cosmology from Home 2023, online, online, 07/2023.

Saulder, C.: DESI PV simulations and clusters. Contributed Talk, DESI Hybrid Collaboration Meeting, Waikoloa Village, USA, 12/2023.

Shangguan, J.: Probing supermassive black hole binaries with VLT/IRISA interferometric observations. Contributed Talk, European Astronomical Society Annual Meeting 2023, Krakow, Poland, 07/2023.

Shimizu, T.: Resolving the Sub-parsec Structure of AGN with VLT/IRISA. Colloquium, Oxford, United Kingdom, 02/2023.

Shimizu, T.: Resolving the Sub-parsec Structure of AGN with VLT/IRISA. Colloquium, Southampton, United Kingdom, 04/2023.

Shimizu, T.: G+ AGN & GC Science Case Update. Invited Talk, Meudon, France, 07/2023.

Shimizu, T.: High-z Quasar Observations with GRAVITY+. Contributed Talk, Multi-wavelength AGN Structure and Cosmological Applications, Nice, France, 10/2023.

Spezzano, S.: Laboratory spectroscopy - From clouds to planets. Invited Talk, Laboratory Astrophysics in the Age of ALMA and JWST, Heidelberg, Germany, 09/2023.

Spezzano, S.: Molecules as astrophysical tools. Invited Talk, BEAM symposium, Halle, Germany, 09/2023.

Spezzano, S.: Molecules as astrophysical tool. Invited Talk, yPC meets Science, online, online, 05/2023.

Stanke, T.: Molecular clouds roasted by starburst clu-

sters. Contributed Talk, Science with the Atacama Pathfinder Experiment (APEX)/MPIfR Bonn, Ringberg, Germany, 01/2023.

Sturm, E.: Resolving the BLR with VLT/IRISA. Contributed Talk, MASCA - Multi-wavelength AGN Structure and Cosmological Applications, Nice, France, 10/2023.

Tacconi, L.J.: ESO: Uniting European Astronomy for 60 Years. Invited Talk, ESO 60th Anniversary Celebration Day in the Czech Republic, Prague, Czech Republic, 02/2023.

Tacconi, L. J.: ESO: Uniting European Astronomy for 60 Years. Invited Talk, ESO 60th Anniversary Celebration Day in Finland, Helsinki, Finland, 06/2023.

Tacconi, L. J.: ESO and Chile Celebrate 60 Years of Collaboration in Astronomy. Invited Talk, ESO and Chile 60 Year Celebration, Santiago, Chile, 10/2023.

Thomas, Jens: Black Holes in Galaxies. Contributed Talk, MICADO Science Team Meeting, Padua, Italy, 10/2023.

Valdivia Mena, M. T.: Rivers in the sky: Disrupting Symmetry in Star Formation Through Asymmetric Infall onto Protostars. Colloquium, Departamento de Astronomia, Universidad de Chile, Santiago, Chile, 09/2023.

Valdivia Mena, M. T.: Rivers in the sky: Disrupting Symmetry in Star Formation Through Asymmetric Infall onto Protostars. Colloquium, Departamento de Física, Universidad de Santiago de Chile, Santiago, Chile, 11/2023.

Valdivia Mena, M. T.: Rivers in the sky: Disrupting Symmetry in Star Formation Through Asymmetric Infall onto Protostars. Colloquium, Max Planck Institute for Astronomy, Heidelberg, Germany, 11/2023.

Widmann, F.: Observation of polarized hotspots. Contributed Talk, eXtreme black holes, Aspen, USA, 03/2023.

Widmann, F.: Polarized hotspots orbiting Sgr A*. Contributed Talk, Galactic Center Workshop, Granada, Spain, 04/2023.

Widmann, F.: The Galactic Center black hole with GRAVITY. Invited Talk, Königstuhl Colloquium, Heidelberg, Germany, 10/2023.

Widmann, F.: What we can learn about SgrA* with NIR-interferometry and polarimetry. Colloquium, Special Colloquium, Bonn, Germany, 12/2023.

van Dishoeck, E.: JWST observations of protostars and disks. Colloquium, Washington, USA, 04/2023.

van Dishoeck, E.: JWST observations of protostars and disks. Colloquium, Madison, USA, 05/2023.

van Dishoeck, E.: JWST observations of protostars and disks. Colloquium, Princeton, USA, 05/2023.

van Dishoeck, E.: The diverse chemistry of protoplanetary disks as revealed by JWST. Invited Talk, Faraday Discussions: Astrochemistry at high resolution, Baltimore, USA, 05/2023.

van Dishoeck, E.: JWST: a new journey of discovery of the cosmos. Public Talk, Planetarium show, Niels Bohr Gold

Medal, Copenhagen, Denmark, 03/2023.

van Dishoeck, E.: JWST: a new journey of discovery of the cosmos. Public Talk, Traverse City, USA, 07/2023.

van Dishoeck, E.: The James Webb Space Telescope: Astrochemistry's exciting new window!. Public Talk, American Chemical Society Webinar, Virtual, USA, 11/2023.

van Dishoeck, E.: Building stars, planets and the ingredients for life in space. Invited Talk, Whitford lecture, Madison, USA, 05/2023.

van Dishoeck, E.: Building stars, planets and the ingredients for life in space. Public Talk, Biology students Iustrum symposium, Leiden, Netherlands, 11/2023.

van Dishoeck, E.: Building stars, molecules and the ingredients for life in space. Invited Talk, Niels Bohr Crossing Boundaries centennial symposium, Copenhagen, Denmark, 08/2023.

van Dishoeck, E.: Molecules between the stars: from clouds to planets. Invited Talk, Sir Geoffrey Wilkinson lecture Imperial College, London, UK, 07/2023.

van Dishoeck, E.: From Nicolaus Copernicus to James Webb: New World Views. Invited Talk, 550 years World Copernicus Congress closing lecture, Torun, Poland, 09/2023.

van Dishoeck, E.: Birth of stars and planets: new views from ALMA and JWST. Invited Talk, African Astronomical Society meeting, Virtual, Africa, 03/2023.

van Dishoeck, E.: Molecular physics between the stars: now being revealed by JWST!. Invited Talk, van der Avoird fest symposium, Nijmegen, USA, 11/2023.

van Dishoeck, E.: Astrochemistry with JWST. Invited Talk, Protostars & Planets VII, Kyoto, Japan, 04/2023.

van Dishoeck, E.: Molecules from clouds to planets: new views from ALMA and JWST. Colloquium, Amsterdam, Netherlands, 09/2023.

van Dishoeck, E.: Molecules from clouds to planets: recent results from JWST. Colloquium, University of Tokyo/NAOJ, Tokyo, Japan, 10/2023.

van Dishoeck, E.: Chemistry from gas to ice and back. Invited Talk, Illuminating the dusty universe: a tribute to Bruce Draine, Florence, Italy, 11/2023.

van Dishoeck, E.: Recent developments in observations of molecules in gas and ices. Invited Talk, Intercat workshop on Interstellar Catalysis, Aarhus, Denmark, 06/2023.

van Dishoeck, E.: Chemistry under extreme conditions in space. Public Talk, Sigma Student Symposium on Extreme Science, Nijmegen, Netherlands, 04/2023.

van Dishoeck, E.: Our origins in space. Invited Talk, Cernobbio Ambrosetti Forum, Lake Como, Italy, 09/2023.

van Dishoeck, E.: JWST: een nieuwe ontdekkingsreis door de kosmos. Public Talk, Studium Generale, Maastricht, Netherlands, 01/2023.

van Dishoeck, E.: JWST: een nieuwe ontdekkingsreis door de kosmos. Public Talk, Gewestdag van de Orde van de Prince, Leiden, Netherlands, 05/2023.

van Dishoeck, E.: JWST: een nieuwe ontdekkingsreis door de kosmos. Public Talk, Societeit de Witte, Den Haag, Netherlands, 05/2023.

van Dishoeck, E.: JWST: een nieuwe ontdekkingsreis door de kosmos. Public Talk, Stichting DE ZINNEN, Den Haag, Netherlands, 10/2023.

van Dishoeck, E.: Waar komt het water op aarde vandaan?. Public Talk, Volkssterrewacht Orion, Bovenkarspel, Netherlands, 11/2023.

PhD Theses

Espejo Salcedo, J. M.: The role of angular momentum in the evolution of star-forming galaxies. Swinburne University of Technology, 2023.

Fresco, A. Y.: Multiphase Probes of Baryon Cycle using Bid Data Quasar Spectroscopy. MPE, 2023.

Mayer, M.: Connecting core-collapse supernova remnants and their central neutrons stars - An Xray study using Chandra and SRG/eROSITA. MPE, 2023.

Mehrgan, K.: The mass composition of massive early-type galaxies. 2023. LMU, 2023.

Neureiter, B.: Accurate Recovery of the Dynamics and Masses of Triaxial Galaxies. LMU, 2023.

Seminaite, A.: Cosmological Implications of Galaxy Clustering in BOSS and eBOSS. MPE, LMU, 2023.

Seppi, R.: Cosmology with clusters of galaxies in the eROSITA era. MPE, 2023.

Wolf, J.: Tracing the Evolution of Super-Massive Black Holes through Cosmic Time with luminous Active Galactic Nuclei. MPE, 2023.

Master Theses

Bolzer, M.-L.: High Contrast Imaging Algorithms for Circumstellar Environments and Exoplanets Characterization with SPHERE/VLT Data. TUM, 2023.

Ding, H.: Optimizing the Smoothing in Non-Parametric Deprojections of Galaxies. LMU, 2023.

Koc, A.: Dark matter in brightest cluster galaxies. LMU, 2023.

Sauter, J.: GRAVITY Wide: Differential Optical Pathlength Compensation Control Architecture and Improved Visibility Prediction. TUM, 2023.

Wessely, P.: GRAVITY + WIDE Implementation of System Control and Metrology for an Optical Differential Pathlength Correction. TUM, 2023.

Bachelor Theses

Lindmeir, M.: Cores von hochrotverschobenen brightest cluster galaxies. LMU, 2023.

Naether, L.: Vorteile der Nutzung des Mikrolinseneffekts bei der Entdeckung von Eis- und Gasriesen um Rote Zwerge hinter der Schneegrenze. LMU, 2023.

Prey, M.: Die Entwicklung der Größe von Spiralgalaxien. LMU, 2024.

Regner, C.: Geometrie von Exoplanetensystemen: Ein Überblick der Orbit-Neigungen heißer Jupiter mit Hilfe des Rossiter-McLaughlin-Effekts. LMU, 2023.

Reichel, V.: Bestimmung kinematischer Parameter von elliptischen Galaxien. TU Bergakademie Freiberg, 2023.

Selimi, A.: Das galaktische Bulge der Milchstraße - Strukturelle Hinweise zur chemodynamischen Evolution. LMU, 2023.

Wechselberger, B.: SMBH Massenabschätzung von Brightest Cluster Galaxies mittels der Break-Radien ihrer Cores. LMU, 2023.

Weger, A.: Die Cores von lokalen Brightest-Cluster-Galaxies (BCGs). LMU, 2023.

Yang, C.: The Development of the Size of Galaxies: Tracing Star Formation in Galaxy Disks with spatially resolved H α Maps from 3D-HST and KMOS3D Survey. LMU, 2023.

Zhang, D.: The different measurements of the supermassive black hole mass at the center of M87 via stellar kinematics, ionized gas dynamics, and radio imaging. LMU, 2023.

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.
 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.
 NAAQF, 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.

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

Astronomical Institute of the Czech Academy of Sciences, Prague: ATHENA.
 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, ATHENA.

EU
ESA.

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: IN-ODE.
IAP, Paris: Nukleare Astrophysik.
Institut d'Astrophysique de Paris: EUCLID.
IPAG, Grenoble: GRAVITY; GRAVITY+; MICADO; CAS-Observations; CAS-Theory.
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+; MICADO; 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; HETDEX; 4MOST.
Deutsches Elektronen-Synchrotron, Hamburg: CAS-Laboratory.
European Southern Observatory (ESO), Garching: GRAVITY; GRAVITY+; Galaxienentstehung; Nukleare Astrophysik; MICADO; ERIS; 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 WFI; 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.
Ludwig-Maximilians-Universität, München: MICADO; HETDEX; eROSITA; CAS-Theory.
Max-Planck-Institut für Astronomie, Heidelberg: GRAVITY; GRAVITY+; SDSS; MICADO; EUCLID; CAS-Theory.
Max-Planck-Institut für Astrophysik, Garching: SDSS; OPTIMA; eROSITA; PFS.
Max-Planck-Institut für Physik, Werner Heisenberg Institut, München: MPG Halbleiterlabor; ATHENA. Max-Planck-Institut für Radioastronomie, Bonn: 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: SBNF; 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: 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, Kanagawa: SBNF.

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.

Astronomical Observatory Institute, Poznań: SBNF.

University Zielona Gora: OPTIMA.

Portugal

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

Departamento de Física da Faculdade de Ciências da Universidade de Lisboa: EUCLID.

Osservatorio Astronomico de Lisboa, Lissabon: ATHENA.

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

Rumania

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

Centro 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; SBNF.
 Instituto de Astrofísica de Andalucía (IAA), Granada: SBNF; ESBO-DS.
 Institut d'Estudis Espacials de Catalunya: EUCLID.
 Instituto de Astrofísica de Canarias, La Laguna: SBNF; 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 Acadèmic 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.

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

Astrophysics 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 JFETElektronik; 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; 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

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, Pittsburgh, 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, NOAO, 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 del Espacio, Institut de Física d'Altes Energies, Centro de Investigaciones Energéticas 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 Uni-

versity, 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, Remeis-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; Institut für Astronomie, 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 Chica-

go, 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.

SBNF - 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), Kaga, 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, Tübingen: 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), Ottobrunn: 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, Fürstfeldbruck, 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), Karlsruhe: 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+.
- Unholtz-Dickie Corp., Wallingford, USA: Shaker System, MPE Test Facility.

Aktivities in Transfer of Know-How

Our many collaborations with other research institutions and industry result in a natural transfer of knowledge. This also applies to the awarding of contracts to industry.

Furthermore, MPE held 13 patents and 4 licences at the end of 2023..