

# Max-Planck-Institut für extraterrestrische Physik



Annual Statistics 2015

## **Imprint**

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# PERSONNEL 2015

## Directors

Prof. Dr. R. Bender, Optical and Interpretative Astronomy, also Professorship for Astronomy/Astrophysics at the Ludwig-Maximilians-University Munich.

Prof. Dr. P. Caselli, Center for Astrochemical Studies

Prof. Dr. R. Genzel, Infrared- and Submillimeter-Astronomy, also Prof. of Physics, University of California, Berkeley (USA) (managing director)

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Prof. Dr. J. Mohr (LMU)

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Dr. H. Hämmerle

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J. Breitkopf, Kayser-Threde GmbH, München

H.-J. Dürmeier, formerly Süddeutscher Verlag, München

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## Interdisciplinary Members of the Advisory Board

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Prof. Dr. M. Perryman, ESA/ESTEC (The Netherlands)

## Scientific Honours, Appointments

Diehl, R.: Fellow, American Physical Society, College Park, USA, October 2015.

Genzel, R.: 2014 Harvey-Preis, Technion, Haifa, Israel, April 2015.

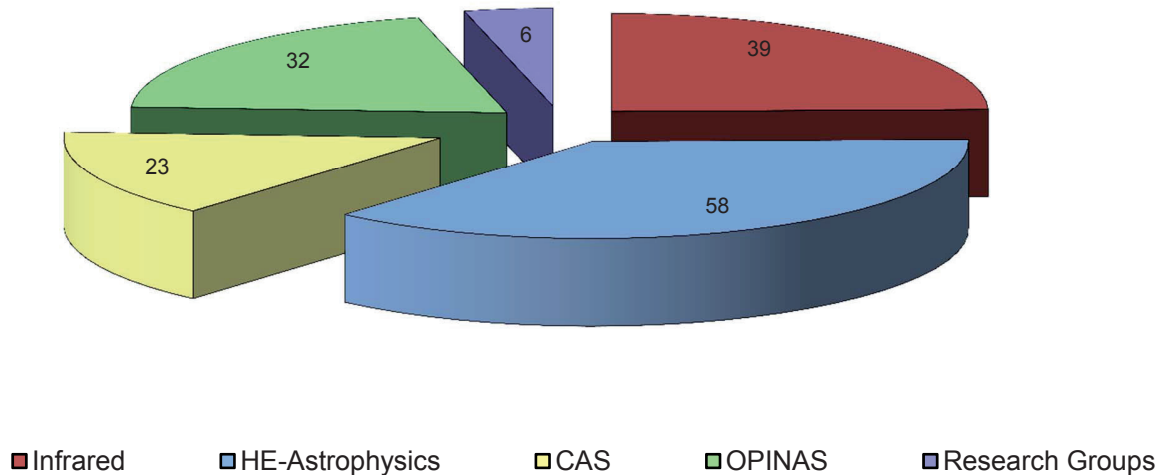
van Dishoeck, E.F.: Lodewijk Woltjer Lecture, European Astronomical Society, La Laguna, Tenerife, Spain, June 2015

van Dishoeck, E.F.: Albert Einstein award for science, World Cultural Council, Dundee, UK, November 2015

Wuyts, S.: 2014-15 Beatrice Tinsley Research Scholar Award, University of Texas at Austin, Austin, USA, April 2015

## Science Groups

### Staff Members by Science Group



#### Infrared- and Submillimeter Astronomy

Secretary: Harai-Ströbl, S.

Team Assistant: Dengler, S.; Kleiser A.; Zanker-Smith, J.

Agudo Berbel, A. (until 30.09.); Bandara, Dr. K. (until 30.10.); Belli, Dr. S. (since 05.10); Berta, Dr. S.; Bisbas, Dr. T. (since 06.07.); Blind, Dr. N. (until 30.09.); Bruderer, Dr. S. (until 31.01.); Burtscher, Dr. L., Buschkamp, Dr. P. (until 30.03.); Cazzoletti, Dr. P. (since 02.11.); Contursi, Dr. A.; Davies, Dr. R.; de Jong, Dr. J.A.; Dexter, Dr. J.; Doublier Pritchard, Dr. V.; Eisenhauer, Dr. F.; Facchini, Dr. S. (since 01.10.); Fedele, Dr. D. (until 31.08.); Feuchtgruber, Dipl.-Phys. H.; Förster Schreiber, Dr. N.; Gillessen, Dr. S.; Gracia Carpio, Dr. J.; Habibi, Dr. M.; Hartl, Dr. M.; A.; Herrera-Camus, Dr. R. (since 12.10.); Kleiser, A.; Kok, Dr. Y. (until 31.01.); Lutz, Dr. D.; Müller, Dr. T.; Orban di Xivry, G.; Osterhage, S.; Pfuhl, Dr. O.; Poglitsch, Dr. A. (beurlaubt); Rabien, Dr. S.; Rosario, Dr. D. (until 30.09.); Schruba, Dr. A.; Sturm, Dr. E.; Tadaki, Dr. K.; Tacconi, Dr. L.; Wisnioski, Dr. E.; Wuyts, Dr. E.; Wuyts, Dr. S. (until 15.09.); Yazici, Dipl.-Phys. S. (since 27.07.)

#### Guests

Cuadra, Dr. J. (19.01.-03.02., 22.06.-22.07., 30.11.-15.12.); Fernández Valenzuela E. (01.10.-04.12.); Mao A. (19.06.-01.09.); Netzer, Prof. Dr. H. (01.07.-14.08.); Sari, Prof. Dr. R. (09.-20.03., 15.-20.05., 25.06.-01.07.); Rudnick, Dr. G. (17.08.-20.11.); Schnorr Müller Dr. A. (01.01.-27.11.); Veilleux, Prof. Dr.S. (01.07.-17.08.); Woillez, Dr. J. (04.05.-29.05.)

#### PhD (D.) / Master (M.)

Cazzoletti P. (since 01.11., D., van Dishoeck); Gräff D. (since 01.09., M., Eisenhauer); Janssen, A. (D., Sturm); Lang, P. (D., Förster Schreiber); Lin, M.-Y. (D., Davies); Lippa, M. (D., Gillessen); Murillo, N. (until 20.11. D., van

Dishoeck); Plewa, P. (D., Gillessen); Schmalzl S. (since 01.12., M., Eisenhauer/Gillessen); Sicheneder E. (since 09.06., M.; Dexter); Übler H. (since 04.05., D., Genzel) , Waisberg I. (since 22.07., D., Genzel)

#### High-Energy Astrophysics

Secretary: Boller, B.

Team Assistant: Frankenhuizen, W.

Andritschke, Dr. R.; Becker, Dr. W.; Boller, Prof. Dr. T.; Bräuninger, Dr. H.; Brunner, Dr. H.; Burkert, Dr. W.; Buron, A.; Burwitz, Dr. V.; Carpano, Dr. S.; Chen, J. Dr. (since 25.10.); Chichuan, Dr. J. (since 01.09.); Clerc, Dr. N.; De Marco, Dr. B.; Del Moro, A. Dr. (since 1.10.); Dennerl, Dr. K.; Diehl, Dr. R.; Dwelly, Dr. T.; Elbs, Dr. J.; Eder, Dipl.-Ing. J.; Emberger, V.; Englert, L.; Eraerds, Dr. T.; Freyberg, Dr. M.; Friedrich, Dr. P.; Fürmetz, Dr. M.; Gaida, R.; Georgakakis, A.; Graham, J. Dr.; Gueguen, A. Dr. (since 01.10.); Greiner, Dr. J.; Grossberger, Dr. C.; Guglielmetti, Dr. F. (until 30.11.); Haberl, Dr. F.; Hartmann, K.; Hartner, Dipl.-Math. G.; Hauser, G.; Kienlin von, Dr. A.; Klein, Dr. M.; Kruehler, Th. Dr. (since 1.9.); Koch, A. (since 1.10.); Meidinger, Dr. N.; Merloni, Dr. A.; Moch, Dr. D. (until 40.4.); Mohr, Prof. Dr. J.; Ott, S.; Pfeffermann, Dipl.-Phys. E.; Porro, Dr. M. (until 30.6.); Predehl, Dr. P.; Ponti, Dr. G.; Proserpio, Dr. L.; Rau, Dr., A.; Reiffers, J.; Sanders, Dr. J.; Schady, Dr. P.; Schlee, Dr. S.; Treberspurg, Dr. W. (since 1.4.); Tüchler, A. (since 1.10.); Walther, S. (until 30.6.); Weidenspointner, Dr. G.; Winter, Dr. A. (until 31.10.); Yates, Dr. R.; Zhang, Dr. X.-L.

#### Guests

Afonos, Dr. P. (01.-30.7.); Ananna, T. (24.6.-31.7.); Buchner, Dr. J. (27.9.-03.10.); Canalizo, Dr. G. (08.-11.12.); De, K. (04.05.- 01.09, DAAD, Student); Dobos, Dr. L. (04.10.-06.10.); Faßbender, Dr. R. (01.01.-31.12.); Filgas, Dr. R. (18.11.-21.11.); Gülcar, C. (01.07.-31.08.);

Heinke, Dr. C. (09.3.-11.3.); Kaiser, B. (01.06.-09.08., Stipendiat); Kanbach, Dr. G. (01.01.-31.12.); Kroupa, Dr. P. (30.08.-05.09.); Mingwu, W. (since 01.09.); Musaeva, Dr. A. (14.06.-15.08.); Nanda, Dr. R. (16.04.-17.4.); Odendaal, Dr. A. (23.05.-19.07.); Pietsch, Dr. W. (01.01.-31.12.); Perma, Dr. R. (20.01.-23.01.); Prinz, Dr. T. (until 30.06.); Scaringi, Dr. S. (01.01.-31.12.); Skinner, Dr. G. (07.03.-31.03.); Strong, Dr. A. (01.01.-31.12.); Sybilski, P. (31.03.-31.07.); Svoboda, Dr. J. (24.11.-27.11); van Eerten, Dr. H. (01.01.-31.12.); Voges, Dr. W. (01.01.-31.12.); Uttley, Dr. P. (30.6.-04.07.); Wang, Dr. W. (until 11.05.); Weisskopf, Dr. M. (14.09.-18.9.); Wellenhofer, C. (30.4. – 31.07.); Zhu, L. (until 28.02.)

### **PhD (D.) / Master (M.)**

Augenstein, A. (M., Diehl); Bähr, A. (D., Meidinger); Bauer, L. (since 1.10., M., Becker); Bernhardt, M.G. (D., Becker); Bodensteiner, J. (M., Greiner); Bolmer, J. (M., Greiner); Breunig, E. (D., Predehl); Buchner, J. (until 30.4., D., Georgakagis); Coffey, D. (D., Salvato, Boller); Delvaux, C. (D., Greiner); Ghaempanah, M. (D., Diehl, Ensslin); Heisemann, P. (until 30.9., M., Becker); Hofmann, F. (D., Merloni); Hsu, L.-T. (D., Salvato, Nandra); Knust, F. (D., Greiner); Kroell, D. (D., Diehl); Madaraz, E. (M., Predehl); Mantovani, G. (D., Nandra); Maggi, P. (until 30.3., D., Haberl); Müller-Seidlitz, J. (D., Becker, Meidinger); Menz, B. (D., Burwitz); Riedl, J. (D., Nandra); Schweyer, T. (M., Greiner); Siegert, T. (D., Diehl); Simm, T. (since 1.10., D., Merloni); Tanga, M. (D., Schady, Greiner); Toelge, K. (M., Greiner); Varela, K. (D., Greiner); Vasilopoulos, G. (D., Haberl); Wiseman, Ph. (D., Schady); Yu, H.-F. (D., Greiner)

### **Optical and Interpretative Astronomy**

Secretary: Ingram C.; Niebisch, B.

Beifiori, Dr. A., Bode, Dr. A.; Bodendorf, Dr. C.; Böhringer, Prof. Dr. H.; Bohnet, A.; Brucalassi, Dr. A.; Erwin, Dr. P.; Farrow, Dr. D.; Galametz, Dr. A.; Geis, Dr. N.; Gerhard, Prof. Dr. O.; Goldenbogen, O.; Grupp, Dr. F.; Hartung, I.; Hopp, Dr. U.; Koppenhöfer, Dr. J.; Katterloher, Dr. R.; Mazzalay, Dr. X.; Mendel, Dr. T.; Montesano, Dr. F.; Muschielok, B. (until 31.7.); Penka, D.; Raison, F.; Saglia, PD. Dr. R.; Sanchez, Dr. A.; Snigula, Dr. J.; Thomas, Dr. J.; Wegg, Dr. C.; Weller, Prof. Dr. J.; Weiss I.; Wimmer, Dipl. Ing. C.

### **Guests**

Chaturvedi, P. (5.7.-8.7.); Fabricius, Dr. M. (10.12.-14.12.); Gebhardt, Dr. K. (25.4.-29.4.); Hill, Dr. G. (24.7.-4.8.); Kormendy, Prof. Dr. J. (19.8.-30.9.); Nikhil, A. (29.6.-30.8.); Odewahn, Dr. S. (24.4.-30.4.); Paz, Dr. D. (13.7.-7.8.); Rudnick, G. (1.11.-31.12.); Survesh, A. (5.5.-21.7.)

### **PhD (D.) / Master (M.)**

Blana Diaz, M. (D., Gerhard); Brucalassi, A. (D., Saglia); Chan, J. (D., Saglia); Chatzopolous, S. (D., Gerhard); Finozzi, F. (D., Saglia); Grieb, J. (D., Bender); Häuser, M. (D., Bender); Kellermann, H. (D., Grupp); Kodric, M.

(D., Bender); Kulkarni, S.; (D., Saglia); Lippich, M. (D., Bender); Longobardi, A. (D., Gerhard); Obermeier, C. (D., Saglia); Opitsch, M. (D., Saglia); Portail, M. (D., Gerhard); Pulsoni, C. (D., Gerhard); Rosotti, G. (M., Bender); Salazar-Albornoz, S. (D., Sanchez); Simm, T. (M., Saglia); Söldner-Rembold, I. (D., Gerhard)

### **Center for Astrochemical Studies**

Secretary: Langer, A.

Agurto Gangas, Dr. C. (since 14.09.); Alves de Oliveira, Dr. F.; Bailey, Dr. J.; Bailey, Dr. N.; Bizzocchi, Dr. L.; Choudhury, Dr. R.; Egner Goto, Dr. M. (since 15.01.); Fedele, Dr. D. (01.09. -30.09.); Feng, Dr. S. (since 01.03.); Giuliano, Dr. B.M. (since 15.03.); Riaz, Dr. B. (since 01.03.); Hocuk, Dr. S.; Ivlev, Dr. A.; Kompaneets, Dr. R.; Laas, Dr. J.; Lattanzi, Dr. V.; Pineda Fornerod, Dr. J.; Pon, Dr. A. (until 14.08.); Röcker, Dr. T.; Sipilä, Dr. O.; Spezzano, Dr. S. (since 01.07.); Szücs, Dr. L. (since 01.01.); Thi, Dr. W.; Vasyunin, Dr. A.; Zhao, Dr. B.; Zhdanov, Dr. S.

### **Guests**

Harju, J. (01.01.-30.06.); Barnes, A. (21.01.-02.02.); Henshaw, J. (22.01.-02.02.); Feng, S. (12.01.-23.01.); Dutrey, A. (12.01.-15.01.); Giuliano, B.M. (07.02.-15.02.); Milam, S. (01.02.-07.02.); Wiesenfeld, L. (01.03.-31.05.); Mookerjee, B. (18.03.-21.03.); Couedel, L. (01.03.-08.03.); Friesen, R. (01.03.-07.03.); Walmsley, M. (26.04.-30.04.); Dore, L. (18.05.-21.05.); Tan, J. (27.05.-14.06.); Aycin, A. (08.06.-12.06.); Goodman, A. (09.07.-14.07.); Moreno, E. (13.07.-16.07.); Giullermo, M. (13.07.-16.07.); Lazarian, A. (23.08.-27.08.); Forbrich, J. (24.08.-02.09.); Tan, J. (04.09.-12.10.); Blake, G. (12.09.-16.09.); Kong, S. (13.09.-04.10.); Walmsley, M. (14.09.-17.09.); Padovano, M. (14.09.-18.09.); Galli, D. (14.09.-18.09.); Fedele, Dr. D. (01.10. until 31.12.); Watanabe, N. (10.10.-13.10.); Oba, Y. (10.10.-13.10.); Ibanez-Mejia, J. (20.10.-23.10.); Mac Low, M. (20.10.-23.10.); Galvan-Madrid, R. (01.11.-06.11.); Pudritz, R. (14.11.-22.11.); Termoto, H. (22.11.-08.12.); Herbst, E. (23.11.-29.11.); Gatti, F. (25.11.-28.11.); Klippenstein, S. (25.11.-01.12.); Mikito, T. (25.11.-08.12.); Bossa, J. (09.12.-11.12.); Fortov, V. (20.12.-23.12)

### **PhD (D.) / Master (M.)**

Chacon, A. (D., Caselli); Punanova, A. (D., Caselli); Sokolov, V. (D., Caselli)

### **Research Group Burkert**

Alig, Dr. C.; Burkert, Prof. Dr. A.; Fierlinger, Dr. K.; Go, Dr. J.

### **PhD (D.) / Master (M.)**

Abella, J. (D., Burkert); Ballone, A. (D., Burkert); Behrendt, M. (D., Burkert)

### **Research Group Mohr**

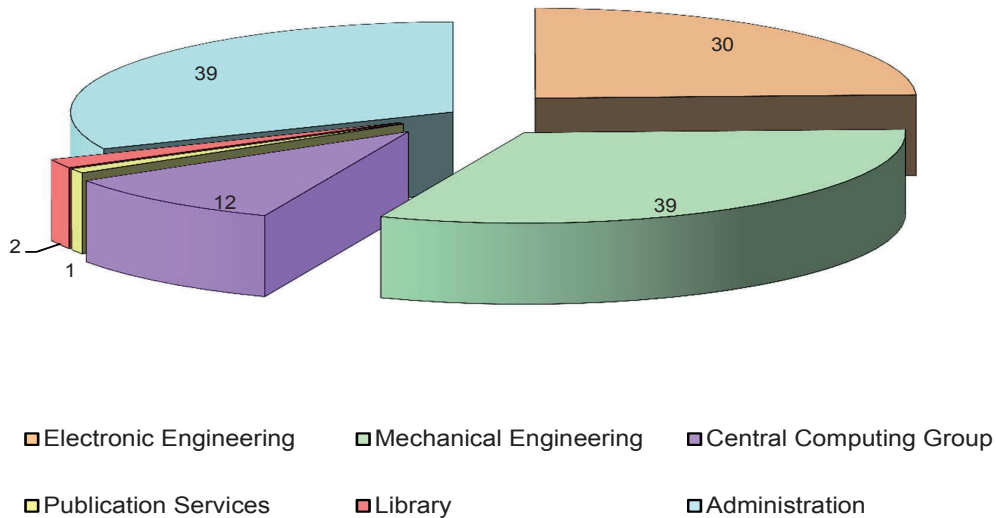
Klein, Dr. M.; Mohr, Prof. Dr. J.

### **PhD (D.) / Master (M.)**

Gupta, N. (D., Mohr)

## Engineering and Workshop

Engineering, Workshops and Central Services Staff



### Electronic Engineering

Plattner, Dr. M. (Head of Electronics)

Albrecht, Dipl.-Ing. S.; Barl, Dipl.-Ing (FH) L.; Bornemann, Dipl.-Ing. (FH) W.; Burghardt, Dipl.-Ing. (FH) T.; Buron, M.Sc. A.; Coutinho, D.; Hälker, Dipl.-Ing. (FH) O.; Hans, O., Hengmith, M.; Kellner, Dipl.-Ing. (FH) S.; Kink, Dipl.-Ing. (FH) W.; Koch, A. (since 1.10.); Müller, Dipl.-Ing. (FH) S.; Ott, Dipl.-Ing. (FH) S.; Rau, Dipl.-Ing. (FH) C.; Reiffers, Dipl.-Ing. (FH) J.; Schitcu, M. (since 20.4.); Schrey, F.; Yaroshenko, V.; Zanker-Smith, J.; Ziegleder, Dipl.-Ing. (FH) J.

### Electrical Workshop and Utilities Management

Reiss, P. (Head)

Cibooglu, H.; Emslander, A.; Gressmann, R.; Krämer, S.; Langer, P.; Oberauer, F.; Özdemir, H. (since 1.4.); Rupprecht, T.; Schneider, M.

### Mechanical Engineering and Test Facility

Schubert, Dr. J. (Head of Mechanics)

Blasi, T.; Deysenroth, C.; Deysenroth, M.; Dittrich, Dipl.-

Ing. (FH) K.; Gemperlein, Dipl.-Phys. H.; Haug, Dipl.-Ing. (FH) M.; Hartl, Dr. M.; Haußmann, F.; Huber, Dipl.-Ing. H.; Mican, Dipl.-Ing. B.; Paßlack, Dipl.-Ing (FH), S.; Pflüger, Dipl.-Ing. (FH) A.; Pietschner, Dipl.-Ing. (FH) D.; Plangger, M.; Rohe, C.; Schreib, R.; Strecker, R.

### Mechanical Workshop

Czempiel, S. (Head)

Bayer, R.; Brara, A.; Budau, B.; Dietrich, G.; Eibl, J.; Feldmeier, P.; Gahl, J.; Goldbrunner, A.; Hartwig, J.; Hiefinger, M. (7.6.-31.8.); Honsberg, M.; Huber, D.; Huber, F.-X.; Kestler, H.-J.; Kratschmann T.; Leimböck, F. (since 1.7.); Reinold, A. (since 1.2.); Sandmair, R.; Schneider, A. (until 31.8.); Schunn, W.; Schuppe, D. (since 1.7.); Senftleben, S.; Soller, F.

### Apprentices

Fischer, C.; Kohnert, P. (since 1.9.); Leimböck, F. (until 30.6.); Lenzewski, S.; Liebhold, T.; Reinold, A. (until 31.1.); Schuppe, D. (until 30.6.); Warmuth, C. (since 1.9.); Ziegmeier, J. (since 1.9.)

## Student Assistants and Interns

### Student Assistants

Böhm, H.; Delgado, D.; Edelmann, T.; von Fellenberg, S.; Gaur, P.; Gillhuber, M.; Gonzáles Salazar, O.A.; Hörmann, V.; Kollmannsberger, S.; Lederhuber, A.; Maté, A.; Schamberger, T.; Schweyer, T.; Würsching, G.

A.; Krüger, N.; Mahr, V.; Meidinger, M.; Säaw, D.; Smith, K.; Thaler, S.; Waldhör, F.; Wild, P.; Wolf, B.

### Practical Work Experience

#### Work Experience (High School)

Belscak, L.; Braun, A.; Iser, T.; Hüttl, I.; Kraus, D.; Kopp,

#### Work Experience (University)

Arora, N.; Fuchs, M.; Hernanz Martinez, V.; Koch, A.; Kriegler, B.; Laspe, V.; Neuss, M.; Rüdtenklau, R.; Speicher, J.; Tikare, K.

## Central Services

### Computing

#### Central Computing Committee

Haberl, Dr. F. (Head)

Bohnet, Dipl.-Phys. A.; Endres, Dr. C. (since 1.2.); Freyberg, Dr. M.; Gracia Carpio, Dr. J.; von Kienlin, Dr. A.; Müller, Dipl.-Ing. (FH) S.; Ott, Dr. T. (Deputy); Rohé, C. (since 1.2.); Schubert, Dr. J.

#### Central Computing Support Group

Haberl, Dr. F. (Head)

Baumgartner, H.; Bohnet, Dipl.-Phys. A.; Kleiser, A.; Klose, L.; Kollmer, C. Oberauer, A.; Ott, Dr. T.; Paul, J.; Sigl, Dipl.-Ing. (FH) R.; Steinle, Dr. H.; Wieprecht, Dipl.-Ing. E.; Wiezorrek, Dipl.-Ing. (FH) E.

#### Publication Services and Copy Shop

Hauner, R.

### Library

Chmielewski, E. (until 31.1.); Bartels, C. (since 1.2.) (Head)

Blank, E.

### Administration

Ihle, M. (until 31.07.); Wanger, H. (since 01.06) (Head VAD)

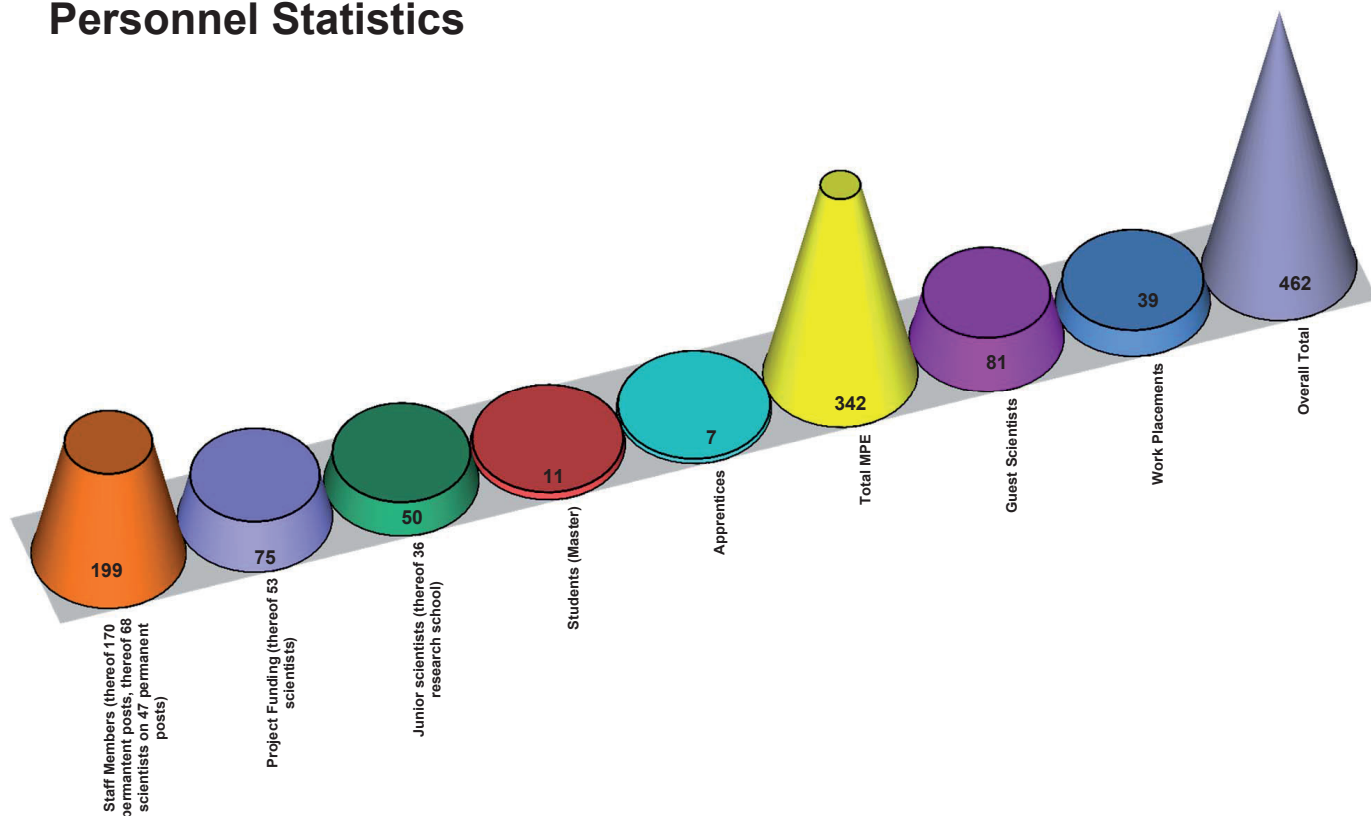
Secretary: Kliem, V.

Apold, G.; Arturo, A.; Bauernfeind, M; Bauer, T., Bitzer, U. (until 31.01.); Cziasto, U.; Doll, E. (until 31.07.); Eicher, C.; Ertl, M.; Fleischmann, S. (01.04.); Goldbrunner, S.; Grasmann, M; Grohmann, M.; Gschnell, H.-P.; Hingerl, P.; Inhofer, I. (until 31.12.); Jäkel, T.; Jirsch, Y.; Karing, W.; Keil, M.; Kestler, L.; Kuhwald, E.; Maier, E. (until 31.07.); Mayer, L. (until 30.04.); Meindl, D.; Nagy, A.; Neun, A. (BR); Paschou, J., Peischl, M.; Preisler, C.; Reither, A. (until 31.01.); Rochner, R.; Rossa, E.; Sandtner, P.; Scheiner, B.; Schwaiger, S.; Seyfarth, B. (since 17.3.); Steinle, R.; Stricker, C. (since 01.10.); Thies, F. (since 09.11.); Thies, L.; Uhland, J. (since 01.10.); Vogt, J.P.

### IMPRS

Schubert, V.

## Personnel Statistics

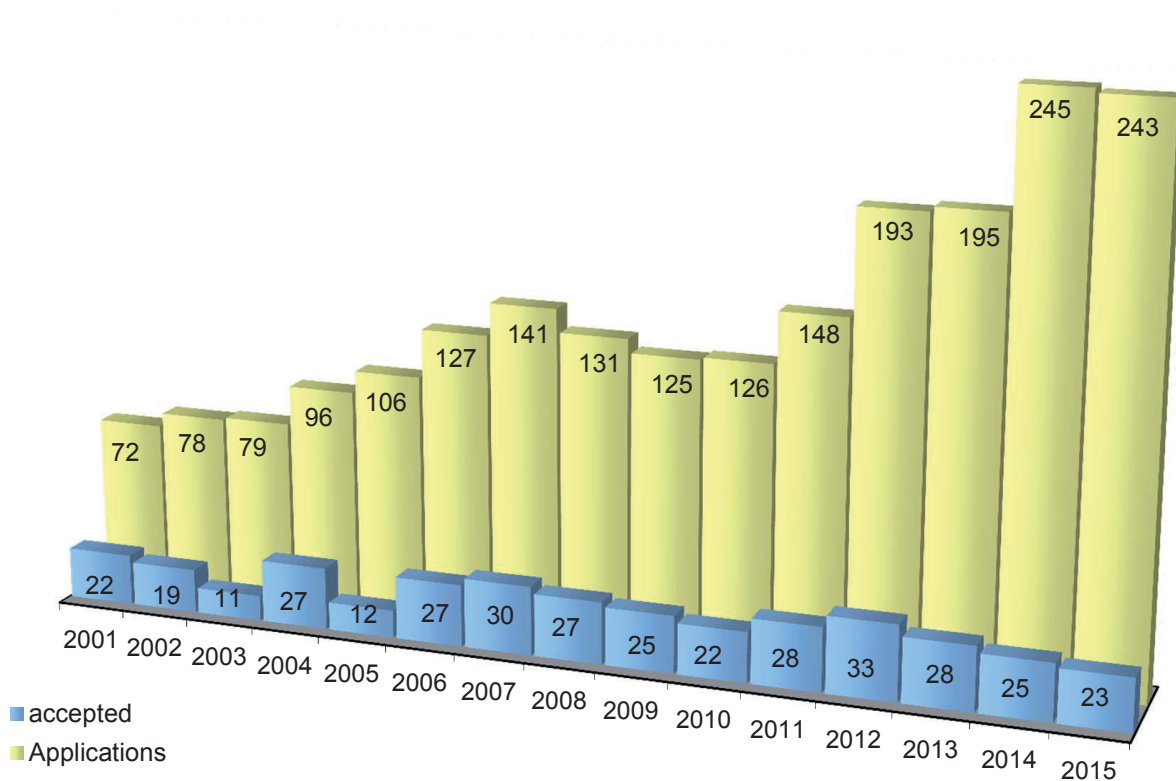


## International Max-Planck Research School (IMPRS) for Astrophysics

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-Institut for Astrophysics) as well as the Observatory of LMU Munich and the European Southern

Observatory ESO. In the academic year 2015 a total of 71 students took part in the program, thereof 26 at the MPE. In 2015, 266 students applied for the year 2016, 22 were accepted, thereof 6 at the MPE (up to February 2016).

### IMPRS Applications since 2001



Summary of annual applications for the IMPRS program in Garching. Since its start in 2001 a total of 2105 students applied, 359 were accepted.

### Public Relations Work

In 2015 the MPE engaged in following PR activities: 30 public talks by MPE scientists, 10 press releases on scientific results, 6 general news (scientific prizes, awards), 27 guided tours through the institute (mainly scientifically oriented school classes). 15 high-school students (1 - 2 weeks) and 10 university students (4 - 8 weeks) were supervised during their internship at the MPE.

40 girls were introduced to the MPE and its science via the federal initiative "Girl's Day" in March. More information about the PR work at the MPE can be found at:

<http://www.mpe.mpg.de/2557/public-outreach>



# Project-Groups

(Project Manager underlined)

## Infrared- and Submillimeter-Astronomy

Deputies to the Director of the Group:  
Lutz, Tacconi.

### ERIS

Davies, Eisenhauer, Feuchtgruber, George, Gräff, Hartl, Plattner, Schubert, Sturm.

### GRAVITY

Blind, Eisenhauer, Genzel, Gillessen, Haug, Haußmann, Kellner, Kok, Lippa, Ott, Pfuhl, Sturm, Wieprecht, Wiezorreck, Yazici, Zanker-Smith.

### Herschel-PACS

Berta, Contursi, Doublie Pritchard, de Jong, Feuchtgruber, Gracia Carpio, Kleiser, Lutz, T. Müller, Osterhage, Sturm.

### LBT Argos

Barl, Davies, M. Deysenroth, Gemperlein, Orban de Xivry, Rabien, Ziegleder.

### LBT LUCI

Buschkamp, Eibl, Eisenhauer, Gemperlein, Honsberg, Rabien, E. Wuyts.

### MICADO

Davies, Hartl, Schubert, Sturm.

### Galactic Center

Dexter, Eisenhauer, Genzel, George, Gillessen, Habibi, Ott, Pfuhl, Plewa, Sicheneder.

### Galactic Nuclei

Burtscher, Contursi, Davies, Genzel, Herrera-Camus, Janssen, Lin, Lutz, Orban de Xivry, Rosario, Schnorr-Müller, Schruba, Sturm, Tacconi.

### Galaxies at high redshift

Bandara, Belli, Berta, Förster Schreiber, Genzel, Lang, Lutz, Rosario, Sturm, Tacconi, Tadaki, Übler, Wisnioski, E. Wuyts, S. Wuyts.

### Starformation

Bisbas, Bruderer, Cazzoletti, Facchini, Fedele, Murillo, Schruba, van Dishoeck.

## High-Energy Astrophysics

ATHENA/Spiegel:  
Budau, Burwitz, Hartner, Menz, Passlack.

### ATHENA/WFI:

Andritschke, Bähr, Bergbauer, Bianchi, Bornemann, Eder, Eraerds, Fürmetz, Haberl, Hälker, Hauser, Kink, Koch, Meidinger, Nandra, S. Ott, Pietschner, Plattner, A. Rau, Schubert, S. Müller, Müller-Seidlitz, Porro, Reiffers, Strecker, Treberspurg, Tüchler.

### CAST

Bräuninger.

### Chandra

Burwitz, Predehl.

### eROSITA

Andritschke, Boller, Bornemann, Bräuninger, Brunner, Budau, Burghardt, Burwitz, Clerc, Coutinho, Dennerl, Dittrich, Eder, Eibl, Emberger, Eraerds, F. Huber, Freyberg, Friedrich, Fürmetz, Gaida, Georgakakis, Goldbrunner, Grossberger, Haberl, Hälker, Hartmann, Hartner, Hengmith, v. Kienlin, Kink, Krämer, Meidinger, Merloni, Micán, S.Müller, Nandra, Oberauer, Pfeffermann, Pietschner, Predehl, Rohé, Rupprecht, Schneider, Schuppe, Schreib, Schrey, Soller, Tiedeman, Yaroshenko.

### ROSAT

Boller, Freyberg, Haberl, Trümper.

### Swift

Greiner, Schady.

### XMM-Newton

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

### Fermi

Collmar, Diehl, Greiner, v. Kienlin, A. Rau.

### GROND

van Eerten, Elliot, Graham, Greiner, A. Rau, Schady, Schrey.

### INTEGRAL

Diehl, v. Kienlin, X.-L. Zhang.

### MXT-SVOM

Burwitz, Meidinger, Nandra, A. Rau.

### OPTIMA

A. Rau, Schrey, Steinle.

#### 4MOST

Boller, Dwelly.

#### Active Galaxies

Boller, Brightman, Buchner, Georgakakis, Merloni,  
Nandra, Salvato.

#### Clusters of Galaxies

Clerc, Sanders.

### Optical and Interpretative Astronomy

#### DES

Bender, Saglia.

#### EUCLID

Bender, Galametz, Gillhuber, Goldenbogen, Grupp,  
Hartung, Kellermann, Koppenhöfer, Penka, Piemonte,  
Raison, Saglia, Wimmer.

#### KMOS

Bender, Galametz, Mendel, Saglia.

#### MICADO

Bender, Saglia, Thomas.

#### PanSTARRS

Bender, Hopp, Saglia, Farrow.

#### Galaxy Dynamics

Bender, Gerhard, Mazzalay, Saglia, Thomas, Wegg.

#### Large Scale Structure

Bender, Farrow, Montesano, Saglia, Sanchez.

#### Stellar Populations and Galaxy Formation

Bender, Hopp, Saglia.

### Center for Astrochemical Studies

#### Observations

Alves, J. Bailey, Feng, Goto, Pineda, Pon, Riaz.

#### Theory

N. Bailey, Choudhury, Hocuk, Ivlev, Sipliä, Thi, Vasyunin,  
Zhao.

#### Laboratory

Bizzocchi, Endres, Giuliano, Laas, Lattanzi, Spezzano.

# Teaching

## **IMPRS on Astrophysics (2015), Garching**

Caselli, P.

Astrochemistry and star/planet formation (WS 14/15)

## **LMU München**

Becker

Endstadien der Sternentwicklung (WS 15/16)

Gravitationswellen und deren Nachweis (SS 15)

Doktorandenseminar über aktuelle Themen aus der Astrophysik (WS 14/15, SS 15, WS 15/16)

Bender

Ergänzung zur Vorlesung "Galaxies" (WS 14/15)

Astronomisches Kolloquium (WS 14/15, SS 15, WS 15/16)

Astrophysikalisches Grundpraktikum (WS 14/15, SS 15, WS 15/16)

Forschungsprojekt Masterarbeit, Anleitung zum wissenschaftlichen Arbeiten (WS 14/15, SS 15, WS 15/16)

Astrophysikalisches Hauptseminar theoretisch und numerisch orientiert, "Tools in modern astrophysics" (WS 14/15, SS 15, WS 15/16)

Begleitendes Kolloquium zum Astrophysikalisches Hauptseminar theoretisch und numerisch orientiert (WS 14/15, SS 15, WS 15/16)

Astrophysikalisches Hauptseminar experimentell und beobachtungsorientiert, "Tools in modern astrophysics" (WS 14/15, SS 15, WS 15/16)

Begleitendes Kolloquium zum Astrophysikalisches Hauptseminar experimentell und beobachtungsorientiert (WS 14/15, SS 15, WS 15/16)

Formation and evolution of cosmic structure from the Big Bang until today (SS 15)

Ergänzung zur Vorlesung "Formation and evolution of cosmic structure from the Big Bang until today" (SS 15)

Projektseminar mit begleitendem Kolloquium "Extragalactic group seminar" (SS 15, WS 15/16)

Projektseminar mit begleitenden Kolloquium "Gravitational lensing" (SS 15)

Projektseminar mit begleitenden Kolloquium "Galaxies" (WS 14/15, SS 15, WS 15/16)

Projektseminar mit begleitenden Kolloquium aus dem Bereich experimenteller Arbeiten und Instrumentenentwicklung in der Astronomie (WS 14/15, SS 15, WS 15/16)

Projektseminar mit begleitenden Kolloquium, vorbereitendes Kolloquium zur Masterarbeit mit Tutorium, Kolloquium und Tutorium aus dem Bereich der Kosmologie, Anleitung zum Wissenschaftlichen Arbeiten (WS 14/15, SS 15, WS 15/16)

Gillessen

Astrophysikalisches Seminar (WS 14/15)

Saglia

Grundlagen der fortgeschrittenen Astrophysik (Essential of Advanced Astrophysics), mit Bender (WS 14/15)

Ergänzung zur Vorlesung "Grundlagen der fortgeschrittenen Astrophysik" (WS 14/15)

Galaxies, Vorlesung (WS 14/15)

Krause

Probestudium (WS 14/15)

## **Technische Universität München**

Diehl

Astrophysics Seminar "Nuclei in the Cosmos" (WS 14/15, SS 15)

Observational High-Energy Astrophysics (SS 15)

Eisenhauer

Einführung in die Astrophysik (WS 14/15, WS 15/16)

High Angular Resolution Astronomy (SS 15)

## **Goethe-Universität Frankfurt**

Boller, Th.

The Physics of the Solar System (WS 15/16)

Radiation and Matter (WS 15/16)

## **Kerschensteiner Kolleg im Deutschen Museum**

Müller, T.

Astronomie, Kosmologie und Relativität: Lehrerfortbildung Gymnasiallehrer in Bayern (SS 15)

## **Ruprecht-Karls-Universität Heidelberg**

Merloni, A.

An X-ray view of Active Galactic Nuclei and their cosmological evolution (SS 15)

## **University of Florida, Gainesville USA**

Caselli, P.

Astrochemical Processes

## **University of Sao Paolo**

Diehl, R.

Nuclear Astrophysics (WS 15/16)

## Organisation of Seminars / Conferences

Chemical Diagnostics of Star and Planet Formation with Cycle 3 ALMA, Garching, 13.1. - 15.1.2015, Organisation: P. Caselli, D. Semenov, L. Testi.

Thermal Models for Planetary Science II, Tenerife, Spain, 3.6. - 5.6.2015, Organisation: M. Delbo, J. Licandro, A. Mainzer, T. G. Müller, P. Tanga, J. Emery, T. Statler, J. Durech, A. Harris, H. Campins, C. Leyrat.

593rd Heraeus-Seminar on "Neue Wege der Satellitennavigation", Bad Honnef, 7.6. - 11.6.2015, Organisation: W. Becker, A. Jessner.

Let's Group: The life cycle of galaxies in their favorite environment, Garching, 16.6. - 19.6., Organisation: P. Popesso, V. Mainieri, A. Merloni, K. Dolag, A. Burkert, J. Mohr, D. Wilman, M. Salvato.

Excellence Cluster Symposium "Symmetries and Phases in the Universe", Irsee, Germany, 22.6. - 25.6.2015, Organisation: S. Bethke, A. Bode, H. Böhringer, A. Burkert, T. Dahms, R. Diehl, E. Emsellem, L. Fabbietti, S. Hilbert, C. Kiesling, E. Komatsu, D. Lüst, A. Müller, S. Paul, P. Popesso, E. Resconi, D. Straub, L.J. Tacconi, J. Weller.

30 Years of Photodissociation Regions, Asilomar, California, USA, 28.6. - 03.7.2015, Organisation: M. Meixner, A. Tielens, J. Bally, F. Bertoldi, M. Burton, P. Goldsmith, E. Falgarone, C. Kramer, W. Latter, S. Madden, T. Onaka, E. Roueff, L. J. Tacconi, E. van Dishoeck.

Marseille International Cosmology Conference: Drifting through the Cosmic Web: the Evolution of Galaxies within the Large Scale Structure, Aix-en-Provence, France, 6.7. - 11.7.2015, Organisation: M. Treyer, L. Tresse, C. Schmid, S. Arnouts, N. Bouché, F. Combes, A. Ealet, N.M. Förster Schreiber, J. van Gorkom, L. Guzzo, S. Lilly, C. Marinoni, J. Peacock, C. Péroux, C. Pichon, N. Scoville, J. Silk and B. Tully.

Star Formation History of the Universe, Garching, 27.7. - 21.8.2015, Organisation: A. Barger, A. Burkert, R. Davies, G. Kauffmann.

MIAPP 2015: The many faces of neutron star, Garching, 24.8.-18.9.2015, Organisation: W. Becker, D. Blaschke, E. v.d. Heuvel, M. Kramer, P. Podsiadlowski, J. Trümper.

IAU XXIX General Assembly, Symposium 319: Galaxies at high redshift and their evolution over cosmic time, Honolulu, Hawaii, U.S.A., 11.8. - 14.8.2015, Organisation: S. Kaviraj, H. Ferguson, B. Barbuy, F. Bournaud, D. Calzetti, L. Cowie, R. Davies, A. Dekel, R. Ellis, N.M. Förster Schreiber, K. Glazebrook, M. Ouchi, S. Ravindranath, E. Sadler, D. Sijacki and M. Urry.

IAU XXIX General Assembly, Focus Meeting 7: Stellar physics in galaxies throughout the Universe, Honolulu, Hawaii, U.S.A., 12.8. - 14.8.2015, Organisation: S. Charlot, C. Leitherer, C. Maraston, P. Coelho, R. de Grijs, J. Eldridge, N.M. Förster Schreiber, J. Gallagher, A. Karakas, R.-P. Kudritzki, P. Marigo.

The Many Faces of Neutron Stars, Garching (MIAPP), 24.8. - 18.9.2015, Organisation: J.T. Trümper, N.K. Kylafis, W.B. Becker, D.B. Blaschke, M.K. Kramer, P. Podsiadlowski, E. van den Heuvel.

Conditions and impact of star formation from lab to space, Zermatt, 7.9. - 11.9.2015, Organisation: Y. Aikawa, M. Beltran, P. Caselli, P. Goldsmith, M. Hogerheijde, D. Maddones, N. Murray, E. Roueff, A. Walsh, A. Whitworth.

From clouds to protoplanetary disks: the astrochemical link, Berlin, 4.10. - 8.10.2015, Organisation: P. Caselli, D. Semenov, C. Endres, L. Testi, A. Vasyunin, Y. Aikawa, H. Beuther, J. Blum, C. Ceccarelli, E. van Dishoeck, C. Dullemond, A. Dutrey, T. Henning, E. Herbst, K. Oberg, N. Sakai, P. Schilke, S. Viti.

eROSITA\_DE Consortium Meeting, Bamberg, 12.10. - 14.10, Organisation: J. Wilms, P. Predehl, A. Merloni.

AO4ELT4 Conference, Lake Arrowhead, California, 26.10. - 30.10.2015, Organisation: J.-L. Beuzit, C. Blain, C. Boyer, Y. Clenet, L. Close, J.-M. Conan, J.-G. Cuby, R. Davies, E. Diolaiti, C. d'Orgeville, F. Eisenhauer, B. Ellerbeck, S. Eposito, M. Ferrari, T. Fusco, M. Hart.

Y. Hayano, P. Hickson, N. Hubin, M. Kasper, C. Kulcsar, O. Lardierre, J. Lu, E. Masciadri, C. Max, R. Myers, B. Neichel, L. Poyneer, R. Ragazzoni, A. Riccardi, F. Rigaut, G. Rousset, R. Stuik, N. Thatte, M. Troy, J.-P. Veran.

COST Scattering Theory meeting, MPE-MIAPP, 23.11. - 8.12.2015, Organisation: W.-F. Thi, L. Wiesenfeld, P. Caselli.

# Publications

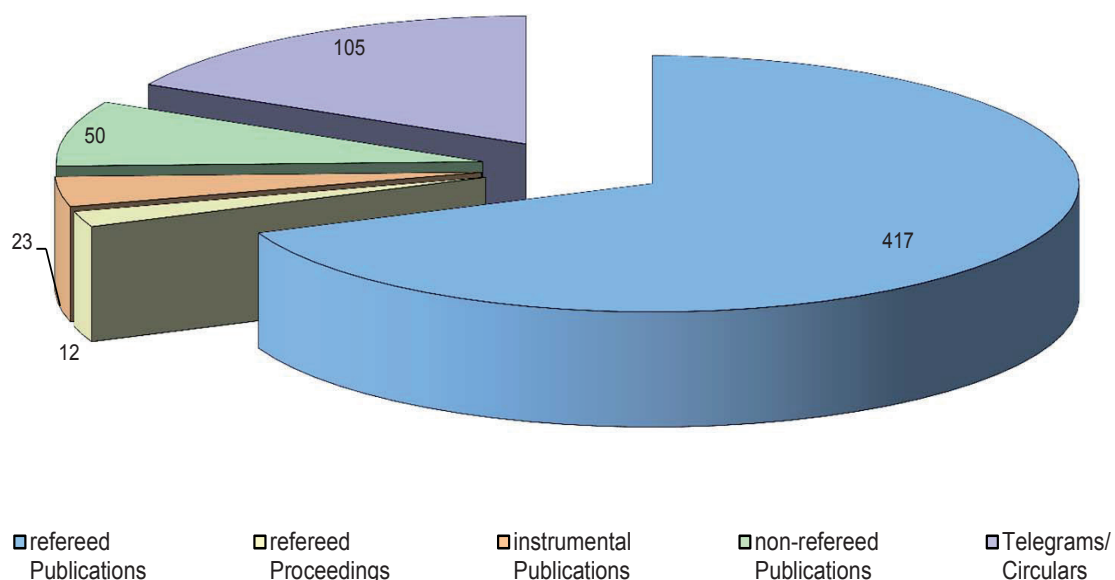
Here we present a tabular and graphical summary of our publication activities in 2015. The publications are counted by science group and publication type. The individual publications are listed consecutively.

## Summary of MPE Publications in 2015

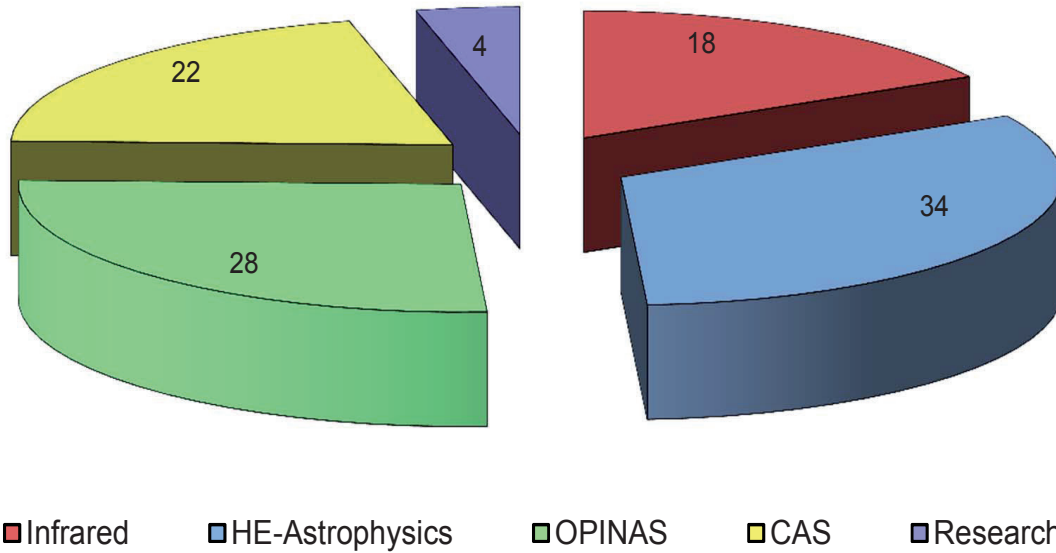
Science Group	refereed Publications	refereed Proceedings	Instrument. Publications	non-refereed Publications	Telegrams/Circulars	Talks	Poster
IR	18 (114)	0 (0)	0 (2)	5 (8)	0 (3)	89 (118)	5
HE Astrophysics	34 (158)	4 (7)	6 (17)	5 (13)	44 (98)	58 (91)	7
OPINAS	28 (75)	0 (2)	3 (4)	12 (17)	2 (4)	28 (48)	3
CAS	22 (48)	0 (3)	0 (0)	5 (10)	0 (0)	20 (32)	10
Res. Grp	4 (22)	0 (0)	0 (0)	0 (2)	0 (0)	13 (24)	0
<b>Total</b>	<b>106 (417)</b>	<b>4 (12)</b>	<b>9 (23)</b>	<b>27 (50)</b>	<b>46 (105)</b>	<b>208 (313)</b>	<b>25</b>

The black entries give the number of publications with a first author from MPE or invited talks, respectively. The red entries in brackets show the total number of publications with MPE contribution 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.

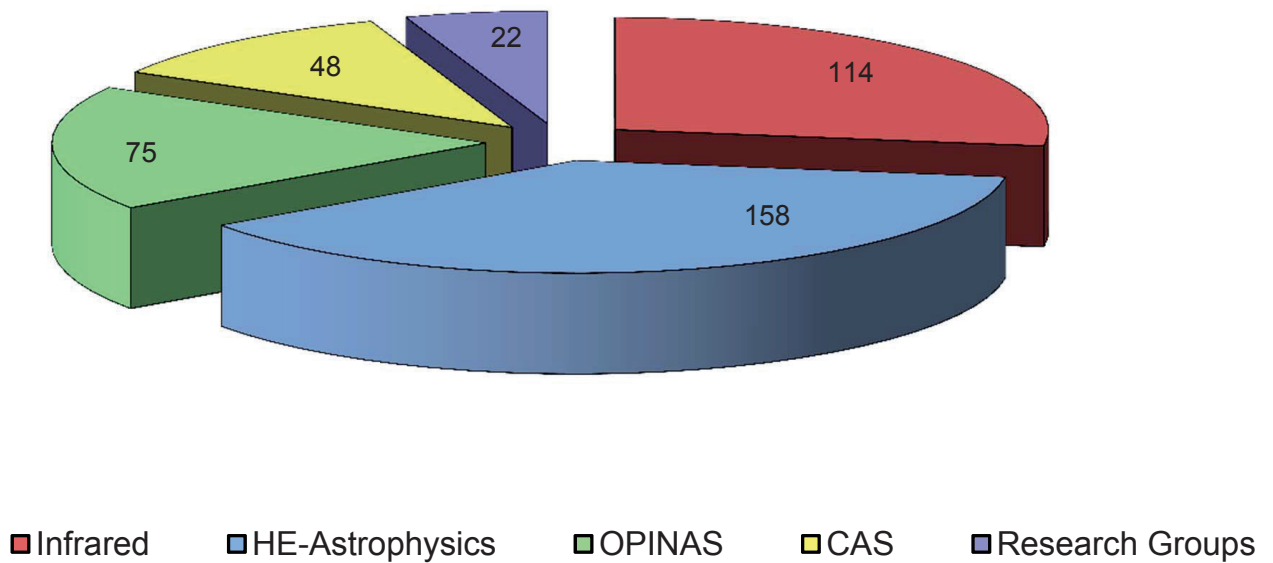
## MPE Publications 2015 (by Type)

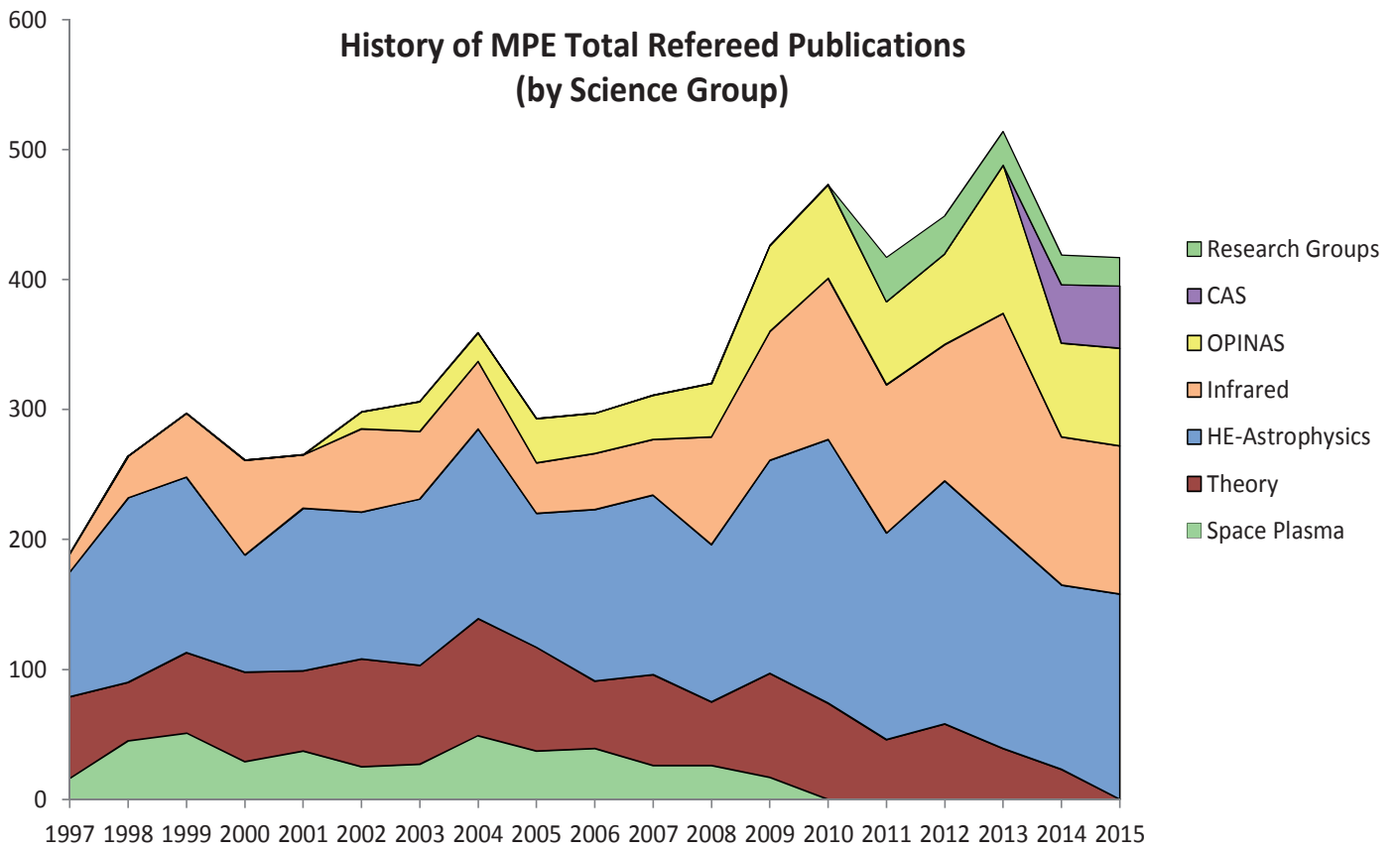


### Refereed Publications with MPE first author in 2015 (by Science Group)



### Total refereed MPE Publications in 2015 (by Science Group)





## Refereed Publications

- ALMA Partnership, E.B. Fomalont, C. Vlahakis, S. Corder, ..., F. Alves, ..., J. Pineda, et al.: The 2014 ALMA Long Baseline Campaign: An Overview. *Ap. J. Lett.* 808, L1-L11 (2015).
- Aalto, S., S. Martín, F. Costagliola, E. González-Alfonso, S. Muller, K. Sakamoto, G.A. Fuller, S. García-Burillo, P. van der Werf, R. Neri, M. Spaans, F. Combes, S. Viti, S. Mühle, L. Armus, A. Evans, E. Sturm, J. Cernicharo, C. Henkel and T.R. Greve: Probing highly obscured, self-absorbed galaxy nuclei with vibrationally excited HCN. *Astron. Astrophys.* 584, A42 (2015).
- Acero, F., M. Ackermann, M. Ajello, ..., A.W. Strong, et al.: Fermi Large Area Telescope Third Source Catalog. *Ap. J. Supp. Ser.* 218, 23 (2015).
- Ackermann, M., M. Ajello, A. Albert, ..., A.W. Strong, et al.: The Spectrum of Isotropic Diffuse Gamma-Ray Emission between 100 MeV and 820 GeV. *Ap. J.* 799, 86 (2015).
- Ackermann, M., M. Ajello, A. Albert, ..., A.W. Strong, et al.: Limits on dark matter annihilation signals from the Fermi LAT 4-year measurement of the isotropic gamma-ray background. *Journal of Cosmology and Astroparticle Physics* 008 (2015).
- Agarwal, B., S. Khochfar, S.: Revised rate coefficients for H<sub>2</sub> and H<sup>-</sup> destruction by realistic stellar spectra. *Mon. Not. R. Astron. Soc.* 446(1), 160-168 (2015).
- Agnello, A., T. Treu, F. Ostrovski, ... D. Gruen, ..., et al.: Discovery of two gravitationally lensed quasars in the Dark Energy Survey. *Mon. Not. R. Astron. Soc.* 454(2), 1260-1265 (2015).
- Aird, J., A.L. Coil, A. Georgakakis, K. Nandra, G. Barro and P.G. Pérez-González: The evolution of the X-ray luminosity functions of unabsorbed and absorbed AGNs out to  $z \sim 5$ . *Mon. Not. R. Astron. Soc.* 451, 1892-1927 (2015).
- Ajello, M., D. Gasparrini, M. Sánchez-Conde, G. Zaharijas, M. Gustafsson, J. Cohen-Tanugi, C.D. Dermer, Y. Inoue, D. Hartmann, M. Ackermann, K. Bechtol, A. Franckowiak, A. Reimer, R.W. Romani and A.W. Strong: The Origin of the Extragalactic Gamma-Ray Background and Implications for Dark Matter Annihilation. *Ap. J. Lett.* 800, L27 (2015).
- Akiyama, K., R.-S. Lu, V.L. Fish, S.S. Doeleman, A.E. Broderick, J. Dexter, et al.: 230 GHz VLBI Observations of M87: Event-horizon-scale Structure during an Enhanced Very-high-energy  $\gamma$ -Ray State in 2012. *Mon. Not. R. Astron. Soc.* 807, 150-160 (2015).
- Alam, S., F.D. Albareti, C. Allende Prieto, ..., N. Clerc, ..., T. Dwelly, ..., A. Georgakakis, ..., J.N. Grieb, ..., M.L. Menzel, ..., A. Merloni, ..., K. Nandra, ..., S. Salazar-Albornoz, ..., M. Salvato, ..., A.G. Sánchez, et al.: The Eleventh and Twelfth Data Releases of the Sloan Digital Sky Survey: Final Data from SDSS-III. *Ap. J. Supp. Ser.* 219, 12 (2015).
- Alam, S., F.D. Albareti, C. Allende Prieto, ..., M. Salvato, et al.: The Eleventh and Twelfth Data Releases of the Sloan Digital Sky Survey: Final Data from SDSS-III. *Ap. J. Suppl.* 219, 12A (2015).
- Allen, R.C., J.-C. Zhang, L.M. Kistler, H.E. Spence, R.-L. Lin, B. Klecker, M.W. Dunlop, M. André and V.K. Jordanova: A statistical study of EMIC waves observed by Cluster: 1. Wave properties. *J. Geophys. Res. (Space Phys.)* 120, 5574-5592 (2015).
- Anastassopoulos, V., M. Arik, S. Aune, ..., H. Bräuninger, ..., P. Friedrich, et al.: Search for chameleons with CAST. *Physics Letters B*, 749, 172-180 (2015).
- ANTARES Collaboration, S. Adrián-Martínez, A. Albert, M. André, ..., C. Großberger, et al.: ANTARES constrains a blazar origin of two IceCube PeV neutrino events. *Astron. Astrophys.* 576, L8 (2015).
- Anthonioz, F., F. Ménard, C. Pinte, J.-B. Le Bouquin, M. Benisty, W.-F. Thi, O. Absil, G. Duchêne, J.-C. Augereau, J.-P. Berger, S. Casassus, G. Duvert, B. Lazareff, F. Malbet, R. Millan-Gabet, M. R. Schreiber, W. Traub, G. Zins: The VLT/PIONIER near-infrared interferometric survey of southern T Tauri stars. I. First results. *Astron. Astrophys.*, 574A, 41A (2015).
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## Poster

- Alves, F. et al.: A Magnetized Prestellar Core: Polarization and Kinematics, From clouds to protoplanetary disks: the astrochemical link, Berlin, Germany, October 2015.
- Alves, F. et al.: Center for Astrochemical Studies, Lange Nacht der Wissenschaften 2015, Garching, Germany, June 2015.
- Carpano, S. et al.: Screening and validation of EXTrAS data products, The first Scientific Conference dedicated to the Athena X-ray Observatory, Madrid, Spain, September 2015.
- Chacón-Tanarro, Ana et al.: Observational studies of pre-stellar cores and dust evolution just before star formation, From clouds to protoplanetary disks: the astrochemical link, Berlin, Germany, October 2015.
- Choudhury, R. et al.: Astrochemistry as a probe of initial conditions of high-mass pre-stellar clumps, The 6th Zermatt ISM Symposium: Conditions and Impact of Star Formation From Lab to Space, Zermatt, Switzerland, September 2015.
- Choudhury, R. et al.: Chemical evolution in high-mass pre-stellar clumps: a MALT90 study, The Soul of High-Mass Star Formation Conference, Puerto Varas, Chile, March 2015.
- De Marco, B. et al.: X-ray Reverberation with Athena, Exploring the Hot and Energetic Universe: The first Scientific Conference dedicated to the Athena X-ray Observatory, Madrid, Spain, September 2015.
- Goto, M. et al.: Infrared Absorption Spectroscopy of NGC 7538 IRS 1 - H<sub>2</sub> and Co, The 6th Zermatt ISM Symposium Conditions and Impact of Star Formation From Lab to Space, Zermatt, Switzerland, September 2015.
- Graciá Carpio, J. et al.: The JScanam Map-Maker Method Applied to Herschel/PACS Photometer Observations, Astronomical Data Analysis Software and Systems (ADASS) conference: ADASS XXV, Sydney, Australia, October 2015.
- Hofmann, F. et al.: Galaxy Cluster Substructure Study with Chandra, SnowCluster 2015 - The Physics of Galaxy Clusters, Salt Lake City, United States, March 2015.
- van Dishoeck, E.F. et al.: Water in star-forming regions with Herschel, IAU General Assembly, Honolulu, USA, August 2015.
- von Kienlin, A.: Search for nuclear gamma-ray line emission from astrophysical sources in the GBM continuous spectral data - an update, Sixth International Fermi Symposium, Washington (DC), USA, November 2015.
- von Kienlin, A.: Using GRBs to cross-calibrate Fermi/GBM and INTEGRAL/SPI, Sixth International Fermi Symposium, Washington, DC, USA, November 2015.
- Laas, J. et al.: Improving Gas-Grain Models of Oxygen and Sulfur, COST Action Our Astrochemical History: First General Meeting, Prague, Czech Republic, May 2015.
- Laas, J. et al.: On the Sulfur Depletion: Toward a More Complete Gas/Grain Model, From clouds to protoplanetary disks: the astrochemical link, Berlin, Germany, October 2015.
- Lippa, M. et al.: Astronomical Interferometry - Inelastic scattering effects in optical fibers, EIROforum School on Instrumentation, Garching, Germany, June 2015.
- Lippa, M. et al.: The GRAVITY Metrology System, VLTI Summer School, Cologne, Germany, September 2015.
- Lutz, D.: The far-infrared view of galaxy evolution: Status and questions, Exploring the universe with JWST, Noordwijk, The Netherlands, October 2015.
- Opitsch, M. et al.: The 2D Stellar and Gas Kinematics in the Central Region of M31, Frontiers of Stellar Spectroscopy in the Local Group and Beyond, Heidelberg, Germany, April 2015.
- Opitsch, M. et al.: The Detailed Stellar and Gas Kinematics in the Central Region of M31, A 3D View on Galaxy Evolution: from Statistics to Physics - MPIA Summer Conference 2015, Heidelberg, Germany, July 2015.
- Portail, M. et al.: Structure and dynamics of the Galactic Bulge and Bar, Gaia-ESO Survey Third Science Meeting, Vilnius, Lithuania, December 2015.
- Punanova, A. et al.: Deuterium Fractionation in the Taurus Molecular Cloud, From clouds to protoplanetary disks: the astrochemical link, Berlin, Germany, October 2015.
- Sokolov, V. et al.: Probing the Evolutionary Stages of Infrared Dark Cloud Cores, From clouds to protoplanetary disks: the astrochemical link, Berlin, Germany, October 2015.
- Spezzano, S. et al.: The deuteration of linear and cyclic C<sub>3</sub>H<sub>2</sub>, From clouds to protoplanetary disks: the astrochemical link, Berlin, Germany, October 2015.
- Szűcs, L. et al.: Losing track of the time: the chemical clock of prestellar core evolution in hydrodynamic simulation, The 6th Zermatt ISM Symposium, Zermatt, Switzerland, September 2015.
- Vasilopoulos, G. et al.: Optical photometry of the low mass X-ray binary V404 Cyg during the June 2015 outburst. The 12th Hellenic Astronomical Conference, Thessaloniki, Greece, July 2015 .
- Yu, Hoi-Fung et al.: The Fermi GBM gamma-ray burst time-resolved spectral catalog: brightest bursts in the first four years, Sixth International Fermi Symposium, Washington D.C., U.S.A., November 2015.

## Talks

- Alves, F.: Multi-wavelength polarimetry as a tool for studying interstellar dust, contributed talk, Mini workshop on dust, Garching, Germany, June 2015.
- Alves, F.: Polarization studies in clouds and cores, invited talk, Chemical Diagnostics of Star and Planet Formation with Cycle 3 ALMA, Garching, Germany, January 2015.
- Alves, F.: Lupus 1: a young filament in a magnetized dynamical regime, contributed talk, Structure of filaments in molecular clouds and their relation to the star-formation processes, Munich, Germany, March 2015.
- Alves, F.: Starlight polarization of star-forming regions, invited talk, ISM Jam @ IAS (Institut d'Astrophysique Spatiale), Orsay, France, June 2015.
- Ballone, A.: Physics of the Galactic Center cloud G2, colloquium, ESO seminar, Santiago, Chile, November 2015.
- Ballone, A.: Physics of the Galactic Center cloud G2, colloquium, seminar at the Instituto de Astrofísica, Pontificia Universidad Católica, Santiago, Chile, November 2015.
- Ballone, A.: The nature and fate of G2: 3D hydrodynamical simulations of the compact source scenario, contributed talk, European Week of Astronomy and Space Science (EWASS) 2015, Tenerife, Spain, June 2015.
- Ballone, A.: The nature and fate of G2: 3D hydrodynamical simulations of the compact source scenario, contributed talk, From the First Quasars to Life-Bearing Planets, From Accretion Physics to Astrobiology, Annual meeting of the German Astronomical Society (AG) 2015, Kiel, Germany, September 2015.
- Becker, W.: An Interplanetary GPS Using Pulsar Signals, invited talk, Munich Satellite Navigation Summit, Munich, Germany, March 2015.
- Becker, W.: Autonomous Spacecraft Navigation with Pulsars, colloquium, Colloquium of the physics department of the Justus-Liebig-University Giessen, Giessen, Germany, January 2015.
- Becker, W.: Autonomous Spacecraft Navigation with Pulsars, invited talk, STARS2015 - Third Caribbean Symposium on Cosmology, Gravitation, Nuclear and Astroparticle Physics, Havana, Cuba, May 2015.
- Becker, W.: Der Stern von Bethlehem aus astronomischer Sicht, public talk, Weihnachtsvorlesung an der Ludwig-Maximilians Universität, Munich, Germany, December 2015.
- Becker, W.: Autonomous Spacecraft Navigation with Pulsars, invited talk, Workshop on High Performance Clocks in Space Science, Bern, Switzerland, December 2015.
- Berta, S.: Dust and Gas in high-z galaxies as seen by Herschel (and beyond) - testing our ignorance, contributed talk, MIAPP workshop: Star Formation History of the Universe, Garching, Germany, August 2015.
- Berta, S.: Dust and Gas in high-z galaxies as seen by Herschel (and beyond), contributed talk, Gas, Dust, and Star-Formation in Galaxies from the Local to Far Universe, Platanias, Crete (Greece), May 2015.
- Berta, S.: Properties of galaxies along/across the MS of star formation, contributed talk, MIAPP workshop: Star Formation History of the Universe, Garching, Germany, August 2015.
- Berta, S.: Testing our ignorance in measuring dust (gas) masses, contributed talk, Modelling galaxies through cosmic times, Cambridge, United Kingdom, September 2015.
- Berta, S.: The ALMA legacy of Herschel deep surveys, contributed talk, ALMA-Herschel archival workshop 2015, Garching, Germany, April 2015.
- Boller, Th.: 4MOST Survey Simulation and Survey Optimization, contributed talk, 4MOST All-Hands-Meeting, Cambridge, Great Britain, September 2015.
- Boller, Th.: Anfang und Ende des Universums, public talk, Rotary Club Munich Pullach, Munich, Germany, November 2015.
- Boller, Th.: Black Hole Imaging as GR tests for the pseudo-complex GR theory, invited talk, New Horizons in Physics, Makutsi Safari Farm, South Africa, November 2015.
- Boller, Th.: Dunkle Materie, Dunkle Energie, Die Entwicklung des Universums, public talk, Rotary Club Munich Level, Munich, Germany, April 2015.
- Boller, Th.: Unser Sonnensystem, public talk, OMG Gymnasium Neufahrn, Neufahrn, Germany, October 2015.
- Burkert, A.: Der Mond, public talk, Petershausen, Germany, January 2015.
- Burkert, A.: Galactic Gas Flows and the Surprising Inefficiency of Star Formation, colloquium; CfA, Harvard, Cambridge, USA, January 2015.
- Burkert, A.: Dark Matter Scaling Relations in Dwarf Spheroidal Galaxies, colloquium, CfA, Harvard, Cambridge, USA, January 2015.
- Burkert, A.: Urknall und Sternenstaub, public talk, Tournee: "Astronomy and Music" at four locations, Germany, February 2015.
- Burkert, A.: Die dunkle Seite des Universums, public talk, Cham, Germany, March 2015.
- Burkert, A.: Dark Matter Scaling Relations in Dwarf Galaxies, invited talk, Ringberg, Germany, April 2015.
- Burkert, A.: Fragmenting Filaments, invited talk, SPP Workshop, Freising, Germany, April 2015.
- Burkert, A.: Kometen, public talk, Petershausen, Germany, April 2015.
- Burkert, A.: Dwarf Galaxies, invited talk, MIAPP Workshop, Garching, Germany, May 2015.
- Burkert, A.: Watching a Tiny Gas Cloud on its Way into the Galactic Supermassive Black Hole, invited talk, ASTRON NAC Conference, Nunspeet, The Netherlands, May 2015.

- Burkert, A.: Physics of Self-Regulated Star Formation, colloquium, Vienna, Austria, May 2015.
- Burkert, A.: Massive Clumps in High-Redshift Galaxies, invited talk, IGM at 50, Spineto, Italy, June 2015.
- Burkert, A.: Glaube und Wissenschaft: Faszination Universum, public talk, Schoenblick, Germany, June 2015.
- Burkert, A.: Dark Matter Scaling Relations in Galaxies, invited talk, Santa Cruz Summer Workshop, Santa Cruz, USA, August 2015.
- Burkert, A.: Our Mysterious Moon, public talk, Lick Observatory, CA, USA, August 2015.
- Burkert, A.: Chemodynamical Models of Galaxy Formation, invited talk, Hensler Retirement Symposium, Vienna, Austria, September 2015.
- Burkert, A.: Unser geheimnisvoller Mond, public talk, Munich, Germany, October 2015.
- Burkert, A.: The Assembly of Galaxies, invited talk, ESTEC, Leiden, The Netherlands, October 2015.
- Burkert, A.: Schwarze Locher: Im Strudel aus Raum und Zeit, public talk, Murnau, Germany, October 2015.
- Burkert, A.: Urknall und Sternenstaub, public talk, Tournee: "Astronomy and Music" at four locations, Germany, November 2015.
- Burkert, A.: Urknall und Sternenstaub, public talk, Bensheim, Germany, December 2015
- Burtscher, L.: A diversity of dusty tori – A very close look at Active Galactic Nuclei in the infrared, colloquium, Physics colloquium, Instituto de Fisica UFRGS, Porto Alegre, Brazil, Porto Alegre, Brazil, May 2015.
- Burtscher, L.: Obscuration in AGNs – Near-infrared luminosity relations and dust colors, contributed talk, TORUS 2015 conference, Winchester, Great Britain, September 2015.
- Burwitz, V.: AHEAD WP8 Joint Research Activity: Characterization of optics for next generation X-ray observatories, invited talk, AXRO 2015: International workshop on Astronomical X-Ray Optics, Prague, Czech Republic, December 2015.
- Burwitz, V.: The eROSITA X-ray Telescope on the Spektr-Rentgen-Gamma (SRG) Mission, contributed talk, SPIE Optics and Photonics: UV, X-Ray, and Gamma-Ray Space Instrumentation for Astronomy XIX, San Diego, USA, August, 2015.
- Burwitz, V.: The eROSITA X-ray Telescope on the Spektr-Rentgen-Gamma (SRG) Mission: Calibrating the Mirrors and Detectors, invited talk, High Energy Astrophysics Today and Tomorrow, Moscow, Russia, December 2015.
- Caselli, P.: Astrochemistry and the first steps toward star and planet formation, colloquium, NRAO, Socorro, United States, November 2015.
- Caselli, P.: Astrochemistry and the first steps toward star and planet formation, colloquium, ETH Zurich, Astronomy Institute, Zurich, Switzerland, May 2015.
- Caselli, P.: Astrochemistry and the first steps toward star and planet formation, colloquium, INAF-Osservatorio Astronomico di Roma, Rome, Italy, March 2015.
- Caselli, P.: Astrochemistry and the first steps toward star and planet formation, colloquium, Max-Planck-Institute for Physics, Munich, Germany, May 2015.
- Caselli, P.: Astrochemistry with SOFIA, invited talk, Ringberg workshop of spectroscopy with the Stratospheric Observatory for Infrared Astronomy (SOFIA), Ringberg, Germany, March 2015.
- Caselli, P.: Chemistry in low-mass star forming regions, invited talk, 6th Zermatt ISM Symposium: conditions and impact of star formation from lab to space, Zermatt, Switzerland, September 2015.
- Caselli, P.: Herschel and ALMA synergy from the ISM to planet forming regions, invited talk, ALMA/Herschel archival workshop 2015, Garching, Germany, April 2015.
- Caselli, P.: Our astrochemical origins, contributed talk, New Mexico Symposium, Socorro, United States, November 2015.
- Caselli, P.: Our astrochemical origins, public talk, Max-Planck-Institute for Extraterrestrial Physics, Garching, Germany, June 2015.
- Caselli, P.: The inner 1000 AU of prestellar cores, contributed talk, Chemical diagnostics of star and planet formation with Cycle 3 ALMA, Garching, Germany, January 2015.
- Caselli, P.: Water, ammonia, methanol and complex molecules in the earliest phases of star formation, contributed talk, Focus meeting 15: Observation of water in the Universe, IAU XXIX general assembly, Honolulu, United States, August 2015.
- Clerc, N.: Galaxy cluster cosmology from X-ray surveys of the hot and energetic Universe, invited talk, XXIXth IAU General assembly - Focus Meeting 6: X-ray surveys of the hot and energetic cosmos, Honolulu, USA, August 2015.
- Davies, R.: Active and Inactive Galaxy Nuclei in the Near-Infrared, invited talk, XVII Advanced School on Astrophysics: 3D Spectroscopy & Spectral Synthesis, Sao Paulo, Brazil, November 2015.
- Davies, R.: An Observational Perspective on the Drivers of Torus Evolution, invited talk, Torus 2015, Winchester, UK, September 2015.
- Davies, R.: MICADO: science opportunities with the first light imager, invited talk, Early E-ELT Science: Spectroscopy with HARMONI, Oxford, UK, June 2015.
- Davies, R.: Resolved Stellar Populations with Visible Adaptive Optics on the VLT, contributed talk, ESO in the 2020s, Garching, Germany, January 2015.
- Davies, R.: Where do Seyferts get their Gas?, contributed talk, Let's Group: The life cycle of galaxies in their favorite environment, Garching, Germany, June 2015.
- De Marco, B.: Reverberation lags in black hole X-ray binaries, contributed talk, EWASS 2015, Tenerife, Spain, July 2015.
- De Marco, B.: Reverberation lags in black hole X-ray binaries, contributed talk, The Extremes of Black Hole Accretion, Madrid, Spain, June 2015.
- De Marco, B.: Reverberation lags in black hole X-ray bi-

naries, invited talk, From the Dolomites to event horizon: Sledging ledging down the Black Hole potential well, Sesto Val Pusteria, Italy, July 2015.

De Marco, B.: X-ray reverberation: a tool to unveil the inner regions of accreting black holes, colloquium, Astronomy group - University of Bristol, Bristol, UK, February 2015.

De Marco, B.: X-ray reverberation: a tool to unveil the inner regions of accreting black holes, colloquium, OPINAS group at MPE, Munich, Germany, March 2015.

De Marco, B.: X-ray reverberation: a tool to unveil the inner regions of accreting black holes, colloquium, SRON Netherlands Institute for Space Research, Utrecht, The Netherlands, February 2015.

Dennerl, K.: Observational Charge Exchange Challenges, invited talk, Charge Exchange X-rays in Current and Future Astrophysical Researches, Cambridge, USA, April 2015.

Dennerl, K.: The energy dependent pulse profiles of accreting magnetars, invited talk, The many faces of neutron stars: Neutron star magnetic fields, origin and evolution, magnetar physics (MIAPP), Garching, Germany, September 2015.

Dennerl, K.: X-ray imaging of solar system bodies, invited talk, Eighth International workshop on Astronomical X-Ray Optics, Prague, Czech Republic, December 2015.

Dexter, J.: Event Horizon Scale Emission Models of Sagittarius A\*, colloquium, Radboud University Nijmegen, Nijmegen, Netherlands, June 2015.

Dexter, J.: Exploring Strong Gravity in the Galactic Center, colloquium, Max Planck Institute for Radio Astronomy, Bonn, Germany, September 2015.

Dexter, J.: Exploring Strong Gravity in the Galactic Center, colloquium, University of Maryland, College Park, USA, November 2015.

Dexter, J.: Exploring Strong Gravity in the Galactic Center, invited talk, Fall meeting of the Astronomische Gesellschaft, Kiel, Germany, September 2015.

Dexter, J.: Imaging a Black Hole Shadow with the Event Horizon Telescope, colloquium, Paris Observatory, Paris, France, February 2015.

Dexter, J.: Missing Pulsars in the Galactic Center, colloquium, Harvard ITC, Cambridge, USA, November 2015.

Dexter, J.: Strong Gravity from Interferometric Observations of Sgr A\*, invited talk, 14th Marcell Grossmann Meeting, Rome, Italy, July 2015.

Dexter, J.: Visualizing and observing black hole event horizons, invited talk, Interdisciplinary cluster workshop on visualization hosted by Universe Cluster, Garching, Germany, November 2015.

Diehl, R.: Conference summary: Nuclear physics in astrophysics, invited talk, Intl. Conf. "Nuclear Physics in Astrophysics" VII, York, United Kingdom, May 2015.

Diehl, R.: First gamma rays from a SN Ia: SN2014J, invited talk, European Week of Astrophysics and Space Sci-

ence (EWASS), La Laguna, Tenerife/Spain, June 2015.

Diehl, R.: First gamma rays from a SN Ia: SN2014J, invited talk, Marcel Grossmann Conference on Relativistic Astrophysics, Rome, Italy, July 2015.

Diehl, R.: Lessons from observations of cosmic gamma rays, invited talk, Summer School on Experimental Nuclear Astrophysics, Santa Tecla, Italy, September 2015.

Diehl, R.: New insights about massive star groups, contributed talk, Research Day RA-G, Excellence Cluster "Origins and evolution of the Universe", Garching, Germany, July 2015.

Diehl, R.: New insights from cosmic gamma rays, colloquium, Florida State University, Tallahassee, FL, USA, Gainesville, USA, January 2015.

Diehl, R.: New insights from cosmic gamma rays, colloquium, Osservatorio Astronomico de Trieste, Trieste, Italy, February 2015.

Diehl, R.: New insights from cosmic gamma rays, colloquium, Physics Department, University of Regensburg, Regensburg, Germany, July 2015.

Diehl, R.: New insights from cosmic gamma rays, colloquium, University of Florida, Gainesville, FL, USA, Gainesville, USA, January 2015.

Diehl, R.: New insights from cosmic gamma rays, invited talk, JINA Conference "Frontiers in Nuclear Astrophysics", East Lansing, USA, March 2015.

Diehl, R.: New insights from cosmic gamma rays, invited talk, Winter School on Nuclear Astrophysics, Russbach, Austria, March 2015.

Diehl, R.: New insights on SN Ia: Gamma-ray lines from SN2014J, invited talk, American Physics Society Conference, Baltimore, USA, April 2015.

Diehl, R.: Observational nuclear astrophysics, invited talk, University of Sao Paulo USP, Physics Department, Sao Paulo, Brazil, April 2015.

Diehl, R.: Origin and evolution of chemical elements: Overview Research Area G, invited talk, Science Week of the Excellence Cluster "Origin and evolution of the universe", Garching, Germany, December 2015.

Diehl, R.: Pair plasma in recent V404 Cygni observations, contributed talk, INTEGRAL Science Workshop, Rome, Italy, October 2015.

Diehl, R.: Radioactive ejecta surveys, contributed talk, MIAPP Workshop "The new milky way", Garching, Germany, May 2015.

Diehl, R.: Radioactive isotopes from cosmic nucleosynthesis: water-controlling heat sources?, invited talk, COSPAR Symposium "Water in the universe", Foz do Iguacu, Brazil, November 2015.

Diehl, R.: Telescopes for cosmic gamma rays, invited talk, Summer School on Experimental Nuclear Astrophysics, Santa Tecla, Italy, September 2015.

Diehl, R.: Tracing ejecta with gamma rays, invited talk, Research Day RA-F, Excellence Cluster "Origin and evolution of the Universe", Garching, Germany, July 2015.



- Diehl, R.: Wie kommt das Eisen in unser Blut?, public talk, Campus Talks, ARD-Alpha, Munich, Germany, October 2015.
- Eisenhauer, F.: Optical/IR Facilities, invited talk, Perspectives of Astrophysics in Germany 2015-2030, Potsdam, Germany, December 2015.
- Eisenhauer, F.: The Centre of the Milky Way, invited talk, ESO in the 2020s, Garching, Germany, January 2015.
- Endres, C.P.: Status report from the CAS laboratories at MPE, invited talk, Laboratory Astrophysics Workshop Heidelberg 2015, Heidelberg, Germany, October 2015.
- Förster Schreiber, N. M.: Galaxy Evolution at the Peak Epoch of Cosmic Star Formation: Insights from Spatially- and Spectrally-Resolved Studies, colloquium, Osservatorio Astrofisico di Arcetri, Florence, Italy, September 2015.
- Förster Schreiber, N. M.: Galaxy evolution at the peak epoch of cosmic star formation, invited talk, 1st Carnegie Searle Symposium: Understanding Nebular Emission in High-Redshift Galaxies, Pasadena, U.S.A., July 2015.
- Förster Schreiber, N. M.: Galaxy evolution at the peak epoch of cosmic star formation, invited talk, Early E-ELT Science: Spectroscopy with HARMONI, Oxford, United Kingdom, July 2015.
- Förster Schreiber, N. M.: Galaxy evolution at the peak epoch of cosmic star formation: Insights from Spatially- and Spectrally-Resolved Studies, invited talk, Annual Meeting of the Astronomische Gesellschaft: From the First Quasars to Life-Bearing Planets - From Accretion Physics to Astrobiology, Kiel, Germany, September 2015.
- Förster Schreiber, N. M.: Galaxy evolution from spatially and spectrally resolved studies: 3D-HST and IFUs synergies, invited talk, Census, Evolution, Physics, New Haven, U.S.A., November 2015.
- Förster Schreiber, N. M.: Galaxy evolution, invited talk, ESO in the 2020s, Garching, Germany, January 2015.
- Förster Schreiber, N. M.: Galaxy evolution, invited talk, Rainbows on the Southern Sky: the legacy value of ESO Public Survey and Large Programmes, Garching, Germany, October 2015.
- Förster Schreiber, N. M.: In-situ view of massive star-forming galaxies and their evolution at the peak epoch of cosmic star formation, invited talk, EWASS Symposium 3: Deconstructing Massive Galaxy Formation, La Laguna, Tenerife, Spain, June 2015.
- Förster Schreiber, N. M.: In-situ view of star-forming galaxies at cosmic noon, invited talk, IAU XXIX General Assembly Focus Meeting 7: Stellar Physics in Galaxies throughout the Universe, Honolulu, Hawaii, U.S.A., August 2015.
- Förster Schreiber, N. M.: Massive Galaxy Evolution at the Peak Epoch of Cosmic Star Formation: the Warm Gas and Stellar Perspective, colloquium, National Astronomical Observatory of Japan, Mitaka, Tokyo, Japan, April 2015.
- Fossati, M.: MUSE and KMOS sneek a peak at the role of environment across cosmic times, invited talk, Galaxy evolution and environment 4, Naples, Italy, December 2015.
- Fossati, M.: MUSE sneaks a peek at extreme ram pressure stripping events, invited talk, The Life and Death of Satellite Galaxies, Lorentz Center, Leiden, Netherland, May 2015.
- Fossati, M.: The growth of Galaxies at  $z = 1 - 2.5$ . A KMO-S<sup>3D</sup> perspective, contributed talk, GDSF: Gas, Dust and Star Formation, Chania, Greece, May 2015.
- Fossati, M.: The growth of star forming galaxies across environments and cosmic time. Results from KMOS<sup>3D</sup>, contributed talk, In the Footsteps of Galaxies: Tracing the Evolution of Environmental Effects, Soverato, Italy, September 2015.
- Fossati, M.: The role of environment on the growth of galaxies at  $z = 1 - 2.5$  from the KMOS<sup>3D</sup> survey, contributed talk, The Many Pathways to Galaxy Growth, Prato, Italy, June 2015.
- Friedrich, P.: Entwicklung einer Röntgenblende mit Hilfe von Lasertechnologie für das eROSITA Teleskop, public talk, 5. Technologie-Forum der LaserJob GmbH, Fürstfeldbruck, Germany, April 2015.
- Genzel, R.: Massereiche Schwarze Löcher und Galaxien, public talk, Open House Day „Lange Nacht der Wissenschaften“ (Long Night of Sciences), Garching, Germany, June 2015.
- Genzel, R.: Massive Black Holes and the Evolution of Galaxies, colloquium, Physics Colloquium, Goethe University, Frankfurt, Germany, December 2015.
- Genzel, R.: Testing the Massive Black Hole Paradigm in the Center of the Milky Way, invited talk, Conference "A Century of General Relativity - The 100th Anniversary of Einstein's Field Equations", Max Planck Institute for Gravitational Physics (Albert Einstein Institute), Berlin, Germany, December 2015.
- Genzel, R.: Angular Momenta, Baryon Fractions and Outflows in KMOS-3D/SINS Star Forming Disks at  $z=1-3$ , invited talk, Santa Cruz Galaxy Workshop, University of Santa Cruz, Santa Cruz, USA, August 2015.
- Genzel, R.: Eulogy of Charles Hard Townes, invited talk, CHT Memorial, Berkeley Congregational Church, Berkeley, USA, February 2015.
- Genzel, R.: Massereiche Schwarze Löcher – die gigantischen Zentren der Galaxien, invited talk, Urania e.V. Berlin, Berlin, Germany, December 2015.
- Genzel, R.: Massive Black Holes and the Evolution of Galaxies, invited talk, 26th Solvay Conference on Physics "Astrophysics and Cosmology" on "100 Years of General Relativity", Brussels, Belgium, November 2015.
- Genzel, R.: Massive Black Holes and the Evolution of Galaxies, invited talk, Poincaré Seminar, Henri Poincaré Institute, Paris, France, November 2015.
- Genzel, R.: Massive Black Holes, colloquium, Physics Colloquium, Technion - The Israel Institute of Technology, Haifa, Israel, April 2015.
- Genzel, R.: Massive Black Holes, invited talk, 100 Jahre Allgemeine Relativitätstheorie, ETH Zurich, Zurich, Switzerland, November 2015.

- Genzel, R.: Overview of MPE Infrared Research, invited talk, National Astronomical Observatory of Japan, Tokyo, Japan, March 2015.
- Genzel, R.: Star Forming Disk Galaxies at the Peak of Galaxy Formation, invited talk, "IGM at 50 – Is the Inter-galactic Medium Driving Star Formation?", Osservatorio Astrofisico di Arcetri, Spineto Abbey, Tuscany, Italy, June 2015.
- Genzel, R.: The Formation and Evolution of Massive Galactic Discs, invited talk, Prize Lecture, Harvey Prize in Science and Technology for the year 2014, Technion - The Israel Institute of Technology, Haifa, Israel, April 2015.
- Genzel, R.: The Formation and Evolution of Massive Star Forming Disk Galaxies, invited talk, IAU Symposium 319: "Galaxies at High Redshift and Their Evolution Over Cosmic Time", Honolulu, Hawaii, USA, August 2015.
- Genzel, R.: The Formation and Evolution of Massive Star Forming Disks, invited talk, Thomas Gold Lecture (Astronomy Colloquium), Ithaca, USA, October 2015.
- Genzel, R.: The Galactic Center Massive Black Hole, invited talk, DPG (German Physical Society) Spring Meeting, Fachverband Gravitation und Relativitätstheorie, Berlin, Germany, March 2015.
- Genzel, R.: The Galactic Center Massive Black Hole, invited talk, Symposium "Symmetries and Phases in the Universe", Irsee, Germany, June 2015.
- Genzel, R.: The Galactic Center Massive Black Hole, invited talk, Thomas Gold Lecture (Physics Colloquium), Ithaca, USA, October 2015.
- Genzel, R.: The Galactic Center: A Unique Laboratory for Studying Fundamental Physical Processes Near Black Holes, invited talk, ESO Workshop "Rainbows on the Southern Sky", Garching, Germany, October 2015.
- Genzel, R.: The Quest for the Massive Black Hole in the Galactic Center, and Why Charlie knew It All Along, invited talk, Symposium "Lasers, Light and Legacy" in Honor of Charles Townes, University of California, Berkeley, USA, August 2015.
- Genzel, R.: The formation and evolution of massive galactic disks, colloquium, Astronomy Seminar, Technion - The Israel Institute of Technology, Haifa, Israel, April 2015.
- George, E. M.: Detecting Echoes from the Dawn of Time, public talk, Chaos Communications Camp, Zehdenick, Germany, August 2015.
- Gerhard, O.: One Long Milky Way Bulge and Bar, contributed talk, Heraeus Workshop Reconstructing the Milky Way, Bad Honnef, Germany, June 2015.
- Gerhard, O.: Stellar Orbits and Angular Momentum in Early-Type Galaxy Halos, invited talk, ESO Workshop Baryons at Low Densities: the Stellar Halos around Galaxies, Garching, Germany, February 2015.
- Gerhard, O.: The Galactic Bulge - is there still a Bulge, or only a Buckling Instability?, invited talk, MIAPP Workshop The New Milky Way, Garching, Germany, May 2015.
- Gerhard, O.: The Galactic Bulge and Bar, invited talk, Chemical and Dynamical Evolution of the Milky Way and Local Group, Sexten Center for Astrophysics, Sesto, Italy, January 2015.
- Gerhard, O.: The Milky Way, the Galactic Halo, and the Halos of Galaxies, invited talk, IAU Symposium 317, The General Assembly of Galaxy Halos: Structure, Origin, and Evolution, Honolulu, Hawaii, USA, August 2015.
- Gerhard, O.: The new Milky Way Bulge and Bar, colloquium, Mount Stromlo Obs., Austr. Nat. Univ., Canberra, Australia, November 2015.
- Gerhard, O.: The new Milky Way Bulge and Bar, colloquium, Sydney Inst. f. Astrophysics, Sydney, Australia, November 2015.
- Gerhard, O.: The new Milky Way Bulge and Bar, contributed talk, 3rd Gaia-ESO Science Meeting, Vilnius, Lithuania, December 2015.
- Gerhard, O.: The new Milky Way Bulge and Bar, invited talk, Excellence Cluster Science Week, Garching, Germany, November 2015.
- Gerhard, O.: The new Milky Way, colloquium, Univ of California Los Angeles, Los Angeles, USA, August 2015.
- Gillessen, S.: Feuerwerk um das Schwarze Loch im Zentrum der Milchstraße?, public talk, Astronomische Gesellschaft Buchloe, Buchloe, Germany, September 2015.
- Gillessen, S.: Feuerwerk um das Schwarze Loch im Zentrum der Milchstraße?, public talk, Sternwarte Gondelsheim, Gondelsheim, Germany, September 2015.
- Gillessen, S.: Sgr A\* in the near-infrared, invited talk, EWASS 2015, La Laguna / Teneriffa, Spain, May 2015.
- Gillessen, S.: The Galactic Center: A stellar ballet and a gaseous scherzo, invited talk, Marcel Grossmann Meeting XIV, Rome, Italy, July 2015.
- Gillessen, S.: The Galactic Center - a unique astrophysical laboratory, colloquium, The Hebrew University of Jerusalem, Jerusalem, Israel, November 2015.
- Gillessen, S.: The Galactic Center - a unique astrophysical laboratory, colloquium, Universität Wuppertal, Wuppertal, Germany, December 2015.
- Gillessen, S.: The Galactic Center - a unique astrophysical laboratory, invited talk, 28th Texas Symposium on Relativistic Astrophysics, Geneva, Switzerland, December 2015.
- Gillessen, S.: The gas cloud G2 on its way around Sgr A\* - an update -, invited talk, Black Holes in Dense Star Clusters, Aspen Center for Physics, Aspen, US, January 2015.
- Gillessen, S.: The power of astrometry in the Galactic Center, invited talk, Gaia for AGN and extragalactic science, GAGNES colloquium, Paris, France, July 2015.
- Gillessen, S.: The tidal disruption of the gas cloud G2 in the Galactic Center, invited talk, Jerusalem TDE Workshop, Jerusalem, Israel, November 2015.
- Gillessen, S.: World of Stars, public talk, Queen Eleanor Primary school, Northampton, UK, March 2015.
- Goto, M.: Protoplanetary disks in the E-ELT era, invited talk, Science and Technology with E-ELT International

- PhD School "F. Lucchin": Science and Technology with E-ELT XIV Cycle II Course, Sicily, Italy, October 2015.
- Grieb, J.N.: Anisotropic Clustering Measurements using Fourier Space Wedges and the status of the BOSS DR12 analysis, contributed talk, Corfu Summer Institute "Particles and the Universe" (TRR33 Corfu Workshop), Corfu, Greece, September 2015.
- Grieb, J.N.: Anisotropic Clustering Measurements using Fourier Space Wedges and the status of the BOSS DR12 analysis, contributed talk, Theoretical and Observational Progress on Large-scale Structure of the Universe (ESO, Garching), Garching, Germany, July 2015.
- Haberl, F.: Observations of proton cyclotron lines, invited talk, The many faces of neutron stars, Garching, Germany, September 2015.
- Haerendel, G.: Rosetta, erste Landung auf einem Kometen und was das MPE dazu beigetragen hat, colloquium, MPE, Garching, Germany, January 2015.
- Haerendel, G.: Electron acceleration in auroras and application to the sun, invited talk, ISSI Team on "Magnetic Waves in Solar Flares: Beyond the Standard Flare Model", ISSI, Bern, Switzerland, February 2015.
- Haerendel, G.: Raumsonde Rosetta: Verabredung mit einem Kometen, public talk, Ballonmuseum Gersthofen, Gersthofen, Germany, April 2015.
- Haerendel, G.: Rosetta und Philae: Begleitung und Besuch eines Kometen, public talk, Physik Modern, Ludwig-Maximilians-Universität, München, Germany, May 2015.
- Haerendel, G.: Interrelationship between electrostatic acceleration in the aurora and in solar flares, invited talk, IPELS 2015, Pitlochry, Scotland, August 2015.
- Haerendel, G.: Overcoming uncertainties in the relation between source and aurora, invited talk, Unsolved Problems in Magnetospheric Physics, Scarborough, UK, September 2015.
- Haerendel, G.: Fifty years of substorm research and its prospects, invited talk, 50th Anniversary of the Space Research Institute, Russian Academy of Sciences, IKI Moscow, Russia, October 2015.
- Haerendel, G.: Current sheet avalanche and substorm breakup, colloquium, Mullard Space Science Laboratory, UK, October 2015.
- Haerendel, G.: Kometenschweife, Polarlicht, Protuberanzen: Magnetische Kräfte formen faszinierende Gebilde im All, public talk, Österreichische Akademie der Wissenschaften, Wien, Austria, November 2015.
- Herrera Camus, R.: The [CII] 158  $\mu\text{m}$  and [NII] 205  $\mu\text{m}$  transitions as star formation tracers, contributed talk, Gas, Dust, and Star-Formation in Galaxies from the Local to Far Universe, Chania, Crete, Greece, May 2015.
- Hocuk, S.: Chemical interplay in dusty clouds, colloquium, Jet Propulsion Labs (JPL), Pasadena, USA, July 2015.
- Hocuk, S.: Gas-ice chemical interplay in interstellar clouds, contributed talk, 30 Years of Photodissociation Regions, Asilomar, USA, July 2015.
- Hocuk, S.: The role of ices in star-forming clouds, contributed talk, Conditions and Impact of Star Formation: From Lab to Space, Zermatt, Switzerland, September 2015.
- Hocuk, S.: The temperature of interstellar dust, colloquium, Kapteyn Astronomical Institute, Groningen, Netherlands, November 2015.
- Ivlev, A.: Impulsive Spot Heating and Thermal Explosion of Interstellar Grains Revisited, contributed talk, From clouds to protoplanetary disks: the astrochemical link, Berlin, Germany, October 2015.
- Ivlev, A.: Statistical mechanics for nonreciprocal forces, invited talk, XXXV Dynamics Days Europe 2015, Exeter, England, September 2015.
- Ivlev, A.: Statistical mechanics where Newton's third law is broken, invited talk, 14th Workshop on the Physics of Dusty Plasmas, Auburn, USA, May 2015.
- Ivlev, A.: Two-dimensional complex plasmas: Equilibrium and non-equilibrium phenomena, invited talk, FISMAT 2015, Palermo, Italy, September 2015.
- Kanbach, G.: COS-B Mission Results, invited talk, COS-B 40th Reunion, ESTEC, Noordwijk, Netherlands, August 2015.
- Klecker, B.: Energetic particle ionic charge states: a clue to their sources and acceleration, colloquium, Swedish Institute of Space Physics (IRF), Kiruna, Sweden, March 2015.
- Klecker, B.: Solar energetic particles in the inner heliosphere, colloquium, Swedish Institute of Space Physics (IRF), Kiruna, Sweden, March 2015.
- Klecker, B.: The ionic charge of energetic particles in interplanetary space: a clue to their sources and acceleration, colloquium, Hefei University of Technology, Hefei, China, November 2015.
- Klecker, B.: Solar energetic particle ionic charge determination: direct and indirect methods, colloquium, National Space Science Center, Beijing, China, November 2015.
- Krause, M.G.H.: Deciphering the ISM around the Scorpius-Centaurus OB Association, contributed talk, ISM-SPP workshop, Freising, Germany, 30 April 2015.
- Krause, M.G.H.: Gas expulsion in massive star clusters, invited talk, ISSI Team meeting "Massive star clusters across the Hubble time", International Space Science Institute, Bern, Switzerland, Bern, Switzerland, 17 June 2015.
- Krause, M.G.H.: The fate of massive star ejecta, contributed talk, "INTEGRAL 2015: The New High Energy Sky after a Decade of Discoveries", conference held in Rome, Rome, Italy, 8 October 2015.
- Krause, M.G.H.: 3D Magnetohydrodynamics Simulations of Cluster Radio Sources, contributed talk, "ICM Physics and Modelling", MPA, Garching, Garching, Germany, 16 June 2015.
- Krause, M.G.H.: Galactic-scale feedback: a symphony for the superbubble orchestra and the AGN solo player, colloquium, University of Hertfordshire, Hatfield, UK, 27 November 2015.
- Krause, M.G.H.: Star clusters & superbubbles, colloquium,

- um, Sterrewacht Leiden, Netherlands, Leiden, Netherlands, 28 October 2015.
- Lin, Ming-Yi: Thick Disks of Dense Gas around the Nuclei of Nearby Seyfert Galaxies, contributed talk, Academia Sinica Institute of Astronomy and Astrophysics (ASIAA), Taipei City, Taiwan, October 2015.
- Lutz, D.: Wide spread AGN driven nuclear outflows in  $z \sim 1-2$  massive star-forming galaxies, contributed talk, Unveiling the Galaxy - AGN evolution connection, Puerto Varas, Chile, March 2015.
- Müller T.G.: (99942) Apophis - A threat to the Earth?, colloquium, Planetary Group Seminar, MPS Göttingen, Göttingen, Germany, February 2015.
- Müller T.G.: 162173 Ryugu (1999 JU3): Searching for the object's spin-axis orientation, invited talk, Hayabusa2 Science Team Meeting, Tokyo, Japan, December 2015.
- Müller T.G.: Asteroids in the thermal infrared, colloquium, Astronomical Observatory of Adam Mickiewicz University, Poznan, Poland, November 2015.
- Müller T.G.: Exotische Welten: Asteroiden, Kometen, Planeten und Exoplaneten, public talk, Lange Nacht der Wissenschaften, Garching, Germany, June 2015.
- Müller T.G.: Faszination Sonnensystem: Von kleinen Körpern und exotischen Welten, public talk, Robert-Mayer-Sternwarte Heilbronn, Heilbronn, Germany, November 2015.
- Müller T.G.: Franken im Weltall, public talk, Markt Stadtlauringen, Birnfeld, Germany, April 2015.
- Müller T.G.: Herschel - Eine Bilanz, public talk, Planetarium am Insulaner, Berlin, Berlin, Germany, February 2015.
- Müller T.G.: Herschel Survey of the Trans-Neptunian Population, invited talk, XXIX IAU General Assembly, FM9, Honolulu, Hawaii, USA, August 2015.
- Müller T.G.: Latest excitement on icy Solar System bodies: TNO Varuna, contributed talk, MPE IR group retreat, Ringberg, Germany, December 2015.
- Müller T.G.: TNOs are Cool: A Herschel survey of the trans-Neptunian region, colloquium, CAS group seminar, Garching, Germany, October 2015.
- Müller T.G.: TNOs are Cool: A Herschel survey of the trans-Neptunian region, colloquium, ESA Scientific Support Office Seminar, ESTEC, Noordwijk, The Netherlands, September 2015.
- Müller T.G.: Zwischen den Planeten: Von Asteroiden und Kometen, public talk, Regiomontanus-Sternwarte Nürnberg, Nürnberg, Germany, October 2015.
- Mantovani, Giulia: Relativistic Fe K $\alpha$  line study in Seyfert 1 galaxies observed with SUZAKU, contributed talk, The Extremes of Black Hole Accretion, Madrid, Spain, June 2015.
- Meidinger, N.: Development of the Wide Field Imager for ATHENA, contributed talk, SPIE Optics and Photonics: UV, X-Ray, and Gamma-Ray Space Instrumentation for Astronomy XIX, San Diego, USA, August.
- Meidinger, N.: WFI Instrument Development Status, invited talk, WFI Proto-Consortium Meeting, Leicester, Great Britain, June 2015.
- Meidinger, N.: WFI Instrument Project Overview, invited talk, WFI Proto-Consortium Meeting, Leicester, Great Britain, June 2015.
- Meidinger, N.: WFI Status, invited talk, ATHENA WORKING GROUP MEETING, Bologna, Italy, February 2015.
- Meidinger, N.: Wide Field Imager for Athena, invited talk, Athena conference, Madrid, Spain, September 2015.
- Meidinger, N.: X-ray detectors with high temporal resolution suitable for pulsar navigation, invited talk, 593. WE-Heraeus-Seminar on Autonomous Spacecraft Navigation - New Concepts, Technologies & Applications for the 21st Century, Bad Honnef, Germany, June 2015.
- Menz, B.: A Fresnel Zone Plate Collimator; Potential and Aberrations, contributed talk, SPIE Optics and Photonics: UV, X-Ray, and Gamma-Ray Space Instrumentation for Astronomy XIX, San Diego, USA, August 2015.
- Menz, B.: A large area X-ray collimator for ATHENA, invited talk, AXRO 2015: International workshop on Astronomical X-Ray Optics, Prague, Czech Republic, December 2015.
- Menzel, M.-L.: A spectroscopic Survey of X-ray selected AGN in the XMM-XXL field, contributed talk, Multi-Object Spectroscopy in the next Decade, La Palma, Spain, March 2015.
- Menzel, M.-L.: AGN-Forecast for eROSITA and pre-SPIDERS science in the XMM-XXL field, contributed talk, SDSS-IV Collaboration Meeting, Madrid, Spain, July 2015.
- Merloni, A.: AGN and Galactic Nuclei, invited talk, RDS Workshop: Perspectives of Astrophysics in Germany 2015-2030, Potsdam, Germany, December 2015.
- Merloni, A.: Massive Spectroscopic surveys of X-ray selected AGN and Clusters: from SPIDERS to 4MOST, invited talk, Multi-Object Spectroscopy in the Next Decade: Big Questions, Large Surveys and Wide Fields, La Palma, Spain, March 2015.
- Merloni, A.: SDSS J0159+0033: a luminous tidal disruption flare in a massive galaxy?, invited talk, From the Dolomites to the event horizon, Sexten, Italy, July 2015.
- Merloni, A.: SPIDERS, invited talk, SDSS-IV Collaboration Meeting, Madrid, Spain, July 2015.
- Merloni, A.: eROSITA: a global view of the hot Universe, colloquium, IoA, Cambridge, UK, February 2015.
- Merloni, A.: eROSITA: a global view of the hot Universe, invited talk, INTEGRAL Workshop: The New High Energy Sky after a Decade of Discoveries, Rome, Italy, November 2015.
- Nandra, K.: Athena Mission status, invited talk, WFI Consortium Meeting, Leicester, UK, June, 2015.
- Nandra, K.: The growth of supermassive black holes, invited talk, Symposium "Symmetries and Phases in the Universe", Kloster Irsee, Germany, June, 2015.
- Nandra, K.: eROSITA: The next-generation all-sky X-ray survey, invited talk, IAU Conference, Honolulu, USA, August 2015.

- Nandra, K.: Athena: Scientific Activities in the Study Phase, invited talk, Exploring the Hot and Energetic Universe: The first scientific conference dedicated to the Athena X-ray observatory, Madrid, Spain, September 2015.
- Nandra, K.: Supermassive Black Hole Growth and its Evolution, invited talk, Demographics and environment of AGN from multi-wavelength surveys, conference, Chania, Greece, September 2015.
- Nandra, K.: eROSITA: Cluster Cosmology with the next-generation all-sky X-ray survey, invited talk, Cluster Cosmology Meeting at the Royal Astronomical Society, London, UK, December 2015.
- Opitsch, M.: The Detailed Stellar and Gas Kinematics in the Central Region of M31, contributed talk, Southern Cross Astrophysics Conference Series VIII: Multiwavelength Dissection of Galaxies, Sydney, Australia, May 2015.
- Opitsch, M.: The Unusual Morphology and Kinematics of the Gas in the Central Regions of M31, contributed talk, Dissecting Galaxies Near and Far: High Resolution Views of Star Formation and the ISM, Santiago, Chile, March 2015.
- Orban de Xivry, G.: Commissioning progress of ARGOS, the laser guide star ground-layer AO system at LBT, colloquium, ESO System Engineering Lunch Talk, Garching, Germany, March 2015.
- Orban de Xivry, G.: Commissioning progresses & first on-sky closed-loop of the GLAO system ARGOS, contributed talk, AO data processing workshop, Marseille, France, May 2015.
- Pon, A.: Evidence for Turbulent Dissipation in Molecular Clouds, invited talk, Chemical Diagnostics of Star and Planet Formation with Cycle 3 ALMA MPE/MPIA Workshop, Garching, Germany, January 2015.
- Pon, A.: Observations of Turbulence Dissipating in Giant Molecular Clouds, colloquium, Max Planck Institute for Astrophysics, Heidelberg, Germany, July 2015.
- Pon, A.: Observations of Turbulence Dissipating in Giant Molecular Clouds, colloquium, NRC-HIA, Victoria, Canada, June 2015.
- Pon, A.: Observations of Turbulence Dissipating in Low Velocity Shocks in the Perseus B1-E5 Starless Core, contributed talk, AAS 225, Seattle, USA, January 2015.
- Pon, A.: Shocks and Superbubbles, colloquium, University of Vienna, Vienna, Austria, May 2015.
- Pon, A.: The Dissipation of Turbulence in Low Velocity Shocks, contributed talk, Structure of Filaments in molecular clouds and their relation to the star-formation processes, Munich, Germany, March 2015.
- Portail, M.: Dynamical models of the Galactic Bulge based on survey data, contributed talk, ESO conference "Rainbows on the Southern Sky", Garching, Germany, October 2015.
- Portail, M.: Structure and dynamics of the Galactic bulge, contributed talk, Excellence Cluster Research Area F Science day, Garching, Germany, July 2015.
- Proserpio, L.: Indirect slumping technology development at MPE for the manufacturing of X-ray optics, contributed talk, 8th International Workshop on Astronomical X-Ray Optics, Prague, Czech Republic, December 2015.
- Pulsoni, C.: The extended Planetary Nebulae Spectrograph (PN.S) early-type galaxy survey - velocity fields at large radii from planetary nebulae, contributed talk, Rainbows on the Southern Sky: science and legacy value of the ESO, Public Surveys and Large Programmes, Garching, Germany, October 2015.
- Rabien, S.: First Results of the Ground Layer Adaptive Optics System ARGOS, contributed talk, AO4ELT4, Lake Arrowhead, USA, October 2015.
- Rau, A.: GROND and eROSITA, contributed talk, eROSITA Consortium Meeting, Bamberg, Germany, October 2015.
- Rau, A.: Science Requirements for the WFI, contributed talk, WFI Proto-Consortium Meeting, Leicester, UK, July 2015.
- Rau, A.: WFI Activities in Phase A, contributed talk, X-IFU Consortium Meeting, Toulouse, France, October 2015.
- Rosario, D. J.: Unveiling the AGN/galaxy evolution connection with deep extragalactic far-IR surveys, invited talk, Unveiling the AGN-Galaxy Evolution Connection, Puerto Varas, Chile, March 2015.
- Rosario, D. J.: The Herschel Perspective on the growth of supermassive black holes, colloquium, UFRGS, Porto Alegre, Brazil, March 2015.
- Salazar-Albornoz, S.: Clustering Tomography on the final BOSS DR12 galaxy sample, contributed talk, MPA/ESO/MPE/EXC Joint Conference on "Theoretical and Observational Progress on Large-scale Structure of the Universe", Garching, Germany, July 2015.
- Salvato, M.: The eROSITA All-Sky Survey and its spectroscopic follow-up, invited talk, Demographics and environment of AGN from multi-wavelength surveys, Chania, Greece, September 2015.
- Salvato, M.: Multiwavelength cross-correlation methods, invited talk, ARCHES:X-ray surveys with advanced multi-wavelength cross-identification methods, Paris, France, November 2015.
- Salvato, M.: The (AGN)pre-eROSITA era: ROSAT-revisited and SPIDERS, invited talk, Demographics and environment of AGN from multi-wavelength surveys, Chania, Greece, September 2015.
- Salvato, M.: The pre-eROSITA era: ROSAT-revisited and SPIDERS, contributed talk, Unveiling the AGN/Galaxy Evolution Connection, Puerto Varas, Chile, March 2015.
- Salvato, M.: AGN science in the era of all-sky surveys (... or so), colloquium, Universita' di Bologna, Bologna, Italy, October 2015.
- Salvato, M.: The eROSITA All-Sky Survey and its spectroscopic follow-up, invited talk, IAU Symposium 319: Galaxies at High Redshift and their Evolution over Cosmic Time, Honolulu, Hawaii, USA, August 2015.
- Sanchez, A.G.: Full-shape analysis of galaxy clustering

- measurements in BOSS DR12, invited talk, Max Planck Institute for Astrophysics, Garching, Germany, April 2015.
- Sanchez, A.G.: A roadmap for covariance matrix estimation, invited talk, Galaxy clustering within Euclid OULE3, Sexten, Italy, July 2015.
- Sanchez, A.G.: Anisotropic galaxy clustering measurements in BOSS, invited talk, Theoretical and Observational Progress on large-scale structure of the Universe, Garching, Germany, July 2015.
- Sanchez, A.G.: Estimating the precision of precision matrix estimates, contributed talk, Euclid Science Collaboration Meeting, Lausanne, Switzerland, June 2015.
- Sanchez, A.G.: Cosmological implications of the final BOSS galaxy samples, colloquium, University observatory LMU, Munich, Germany, May 2015.
- Sanders, J.S.: Athena: the future of X-ray cluster astronomy, contributed talk, A critical assessment of cluster cosmology, London, UK, December 2015.
- Sanders, J.S.: Studying AGN feedback in X-ray observations of groups and clusters, invited talk, Let's group. The life cycle of galaxies in their favourite environment, Garching, Germany, June 2015.
- Sanders, J.S.: Studying AGN feedback in galaxy clusters and groups with Athena, invited talk, Exploring the Hot and Energetic Universe: The first Scientific Conference dedicated to the Athena X-ray Observatory, Madrid, Spain, September 2015.
- Schruba, A.: Molecular Gas and Star Formation from Galaxy to Sub-Cloud Scale in Andromeda, contributed talk, Gas, Dust, and Star-Formation in Galaxies from the Local to Far Universe, Plataniass-Chania, Greece, May 2015.
- Schruba, A.: Properties of the Molecular Gas and Star Formation Process in Andromeda, contributed talk, Lifecycle of gas in galaxies: A Local Perspective, Dwingeloo, Netherlands, September 2015.
- Schruba, A.: Star Formation in an Lstar Galaxy: A Detailed Study of the Andromeda Galaxy, contributed talk, A 3D View on Galaxy Evolution: from Statistics to Physics, Heidelberg, Germany, July 2015.
- Schruba, A.: Linking the Galaxy's Star Formation Process to Molecular Cloud Properties, colloquium, Astronomisches Rechen-Institut, Zentrum für Astronomie der Universität Heidelberg, Heidelberg, Germany, October 2015.
- Schweyer, T.: Astrobo: Towards a new observatory control system for the Garching Observatory 0.6m, contributed talk, Fourth Workshop on Robotic Autonomous Observatories, Torremolinos, Spain, September 2015.
- Siegert, T.: Gamma-ray line diagnostics of supernova explosions – Cas A and SN2014J, contributed talk, Nuclear Physics in Astrophysics VII, York, United Kingdom, May 2015.
- Siegert, T.: Positron Annihilation in the Milky Way, contributed talk, INTEGRAL Workshop 2015 - The New High Energy Sky after a Decade of Discoveries, Rome, Italy, October 2015.
- Sipilä, O.: Spin-state chemistry of deuterated ammonia, contributed talk, From clouds to protoplanetary disks: the astrochemical link, Berlin, Germany, October 2015.
- Sokolov, V.: Deuterium fractionation tracing the evolution of IRDC cores, contributed talk, Soul of High-Mass Star Formation, Puerto Varas, Chile, March 2015.
- Sturm, E.: PDRs in Starburst and (U)LIRG environments, invited talk, 30 Years of Photodissociation Regions, Monterey, USA, June 2015.
- Szűcs, L.: A benchmark of CO emission as molecular cloud mass indicator, contributed talk, 30 years of Photo-Dissociation Regions, Asilomar, Pacific Grove, USA, June 2015.
- Tacconi, L.J.: Galaxy Assembly and Dynamics at the Peak Epoch of Cosmic Star Formation, colloquium, Physics Department, University of Bonn, Bonn, Germany, July 2015.
- Tacconi, L.J.: Molecular Gas, Star Formation and Galaxy Dynamics from  $z=2.5$  to the Present, colloquium, Astronomy Department, Durham University, Durham, United Kingdom, May 2015.
- Tacconi, L.J.: Molecular Gas, Star Formation and Galaxy Dynamics from  $z=2.5$  to the Present, colloquium, Cavendish Laboratory, University of Cambridge, Cambridge, United Kingdom, November 2015.
- Tacconi, L.J.: Molecular Gas, Star Formation and Galaxy Dynamics from  $z=2.5$  to the Present, invited talk, The 6th Zermatt ISM Symposium, Zermatt, Switzerland, September 2015.
- Tacconi, L.J.: NOEMA: Northern Extended Millimeter Array, Project Update, invited talk, NAOJ/IoA-MPE strategy meeting, Mitaka, Japan, April 2015.
- Tacconi, L.J.: Star Formation and Gas Scaling Relations from  $z=2.5$  to the Present, invited talk, 2015 Santa Cruz Galaxy Workshop, Santa Cruz, California, USA, August 2015.
- Tacconi, L.J.: Star Formation and Gas Scaling Relations from  $z=2.5$  to the Present, invited talk, IGM@50 Conference, Spineto, Italy, June 2015.
- Tacconi, L.J.: The Evolution of Molecular Gas and Star Formation: The Peak Epoch of Galaxy Formation to the Present, colloquium, Institute of Astronomy, Tokyo University, Mitaka, Japan, April 2015.
- van Dishoeck, E.F.: Alexander Dalgarno's contributions to astrochemistry, invited talk, From clouds to protoplanetary disks: the astrochemical link, Berlin, Germany, October 2015.
- van Dishoeck, E.F.: Building stars, planets and the ingredients for life between the stars (Albert Einstein award lecture), colloquium, University of Dundee, Dundee, UK, November 2015.
- van Dishoeck, E.F.: Building stars, planets and the ingredients for life between the stars (Sir Robert Wilson lecture), colloquium, University College London, London, UK, December 2015.
- van Dishoeck, E.F.: Chemistry and the physical structure of disks, invited talk, Star- and Planet Formation in the

Southwest conference, Tucson, USA, March 2015.

van Dishoeck, E.F.: Chemistry of volatiles from cores to disks and comets, invited talk, Gordon conference Origins of solar systems, Mount Holyoke, USA, June 2015.

van Dishoeck, E.F.: Complex organic molecules in star-forming regions: sweet results from ALMA, invited talk, Carbon in the Galaxy, American Chemical Society symposium, Denver, USA, March 2015.

van Dishoeck, E.F.: From cores to disks and comets: science with APEX, colloquium, Apex, San Pedro de Atacama, Chile, December 2015.

van Dishoeck, E.F.: IAU Division H overview, invited talk, IAU General Assembly, Division H meeting, Honolulu, USA, August 2015.

van Dishoeck, E.F.: Photodissociation in astrophysics: introduction, invited talk, Photodissociation in astrophysics workshop, Oegstgeest, Netherlands, February 2015.

van Dishoeck, E.F.: Probing the embedded phase of star formation with JWST spectroscopy, contributed talk, Exploring the universe with JWST, Noordwijk, Netherlands, October 2015.

van Dishoeck, E.F.: Revealing planetary construction zones in transitional disks, colloquium, Joint ALMA Office, Santiago, Chile, December 2015.

van Dishoeck, E.F.: Summary discussion, invited talk, Transitional disks and planet formation Lorentz Center workshop, Leiden, Netherlands, March 2015.

van Dishoeck, E.F.: The CO ladder from low- to high-mass protostars, contributed talk, IAU General Assembly, IAU Symposium 315, Honolulu, USA, August 2015.

van Dishoeck, E.F.: The molecular trail from clouds to stars and planets (Woltjer award lecture), invited talk, EWASS 2015, Tenerife, Spain, June 2015.

van Dishoeck, E.F.: The molecular universe: from observations to laboratory and back, invited talk, IAU General Assembly, Focus meeting 12, Honolulu, USA, August 2015.

van Dishoeck, E.F.: Water and ice in the universe: from clouds to planets, invited talk, Water in the universe, 2nd COSPAR Symposium, Foz do Iguacu, Brazil, November 2015.

van Dishoeck, E.F.: Zooming into planet-forming zones of disks: sweet results from ALMA, colloquium, ASTRON, Dwingeloo, Netherlands, September 2015.

van Dishoeck, E.F.: Zooming into planet-forming zones of disks: sweet results from ALMA, colloquium, IAP, Paris, France, October 2015.

Vilenius, E.: The diverse properties of trans-Neptunian objects, colloquium, ESO Stellar coffee and planetary tea, Garching, Germany, January 2015.

Wegg, C.: Microlensing constraints on the mass profiles of the Milky Way's disk and dark matter halo invited talk, Excellence Cluster RA-E Research Day "What is the nature of dark matter and cosmic acceleration?", Munich, Germany, October 2015.

Wegg, C.: The Structure and Dynamics of the Inner 5kpc of the Milky Way, contributed talk, EWASS 2015, La Laguna / Tenerife, Spain, June 2015.

Wegg, C.: The structure of the Milky Way bar and bulge from photometric surveys, contributed talk, Rainbows on the Southern Sky: science and legacy value of the ESO Public Surveys and Large Programmes, Munich, Germany, October 2015.

Wen, M.: Indirect slumping technology development at MPE for the manufacturing of X-ray optics, contributed talk, 8th International Workshop on Astronomical X-Ray Optics, Prague, Czech Republic, December 2015.

Wilman, D.J.: A more detailed picture of environmental effects with new ESO instrumentation, invited talk, In the Footsteps of Galaxies: Tracing the Evolution of Environmental Effects, Soverato, Italy, September 2015.

Wilman, D.J.: An inside-out growth and outside-in truncation of star-forming disks? Testing the role of star-formation driven size growth with resolved H $\alpha$  maps from KMOS<sup>3D</sup> and HAGGIS at  $z=0-2.5$ , contributed talk, The Many Pathways to Galaxy Growth, Prato, Italy, May 2015.

Wilman, D.J.: Resolved H $\alpha$  maps and profiles from KMOS<sup>3D</sup> and HAGGIS at  $z=0-2.6$ : Painting a picture of growth and quenching, colloquium, ICG, University of Portsmouth, ICG, University of Portsmouth, UK, June 2015.

Wilman, D.J.: Satellite Quenching, invited talk, The Life and Death of Satellite Galaxies, Leiden, Netherlands, April 2015.

Wilman, D.J.: The size growth and truncation of star-forming galaxy disks in massive halos at  $z=0-2.5$ : Evidence from KMOS<sup>3D</sup> and HAGGIS, contributed talk, Let's Group. The Life-cycle of galaxies in their favourite environment, Garching, Germany, May 2015.

Wisnioski, E.: KMOS<sup>3D</sup> - The evolution of resolved kinematics and star-formation from  $z=0.7-2.7$ , colloquium, Max Planck Institute for Astrophysics, Heidelberg, Germany, August 2015.

Wisnioski, E.: KMOS<sup>3D</sup> - The evolution of resolved kinematics and star-formation from  $z=0.7-2.7$ , invited talk, Science with MOS: towards the E-ELT era, Cefalu, Italy, September 2015.

Wisnioski, E.: Tracing high- $z$  galaxy kinematics - evolution of turbulent disks to quenched spheroids, invited talk, Consensus, Evolution, Physics with 3D-HST, New Haven, USA, November 2015.

Wisnioski, E.: Tracing high- $z$  galaxy kinematics - evolution of turbulent disks to quenched spheroids, invited talk, The Many Pathways to Galaxy Growth, Prato, Italy, May 2015.

Wuyts, E.: Galaxy evolution studies with KMOS, contributed talk, Star Formation History of the Universe, Munich, Germany, August 2015.

Wuyts, E.: The evolution of galaxy abundances from  $z=2.6$  to  $z=0.8$ , contributed talk, AG Splinter Meeting: Science with the LBT, Kiel, Germany, September 2015.

Wuyts, E.: The evolution of metallicity and metallicity gradients from  $z=2.7$  to 0.6 with KMOS<sup>3D</sup>, contributed talk,

Consensus, Evolution, Physics with 3D-HST, New Haven, USA, November 2015.

Wuyts, E.: The mass-metallicity relation and abundance gradients with KMOS<sup>3D</sup>, invited talk, 1st Carnegie Searle Symposium: Understanding Nebular Emission in High-Redshift Galaxies, Pasadena, USA, July 2015.

Wuyts, S.: Early galaxies: alive, dead, transitioning and/or active, colloquium, University of Texas at Austin, Austin, USA, April 2015.

Wuyts, S.: KMOS<sup>3D</sup>: the mass budget in early disks, invited talk, Census, Evolution, Physics, New Haven, USA, November 2015.

Wuyts, S.: Massive galaxy growth since cosmic noon, colloquium, Kali Institute for Astronomy and Astrophysics, Beijing, China, January 2015.

Wuyts, S.: Massive galaxy growth since cosmic noon, colloquium, University of Texas at Austin, Austin, USA, March 2015.

Wuyts, S.: The life and death of massive galaxies, invited talk, University of Bath, Bath, United Kingdom, March 2015.

Yu, H.-F.: Gamma-ray bursts from theory to observation: spectral analysis, emission mechanisms, and more, contributed talk, Universe Cluster Science F Day, Garching, Germany, July 2015.

Yu, H.-F.: On the Sharpness of Gamma-Ray Burst Prompt Emission Spectra, contributed talk, Sixth International Fermi Symposium, Washington D.C., U.S.A., November 2015.



## PhD Theses

Buchner, J.: On the obscuration of the growing supermassive black hole population. Ludwig-Maximilians-Universität München 2015.

Chatzopoulos, S.: The old nuclear star cluster in the Milky Way. Ludwig-Maximilians-Universität München 2015.

Kulkarni, S.: Understanding the evolutionary modes of disks with resolved H $\alpha$  maps of 390 galaxies in local groups. Ludwig-Maximilians-Universität München 2015.

Longobardi, A.: Where stellar halos coexist with intracluster light: a case study of the giant Virgo-central galaxy M87. Ludwig-Maximilians-Universität München 2015.

Greisel, N.: Photometric redshifts and properties of galaxies from the Sloan Digital Sky Survey. Ludwig-Maximilians-Universität München 2015.

Holland, J. G.: Optical and X-ray structures in the REXCESS sample of galaxy clusters. Ludwig-Maximilians-Universität München 2015.

Hsu, L.-T.: Photometric redshifts of faint X-ray sources: paving the way towards the study of AGN/galaxy co-evolution over cosmic time. Ludwig-Maximilians-Universität München 2015.

Huber, M. B.: The relation between physical properties of galaxies and their environmental geometry in the Sloan Digital Sky Survey. Ludwig-Maximilians-Universität München 2015.

Maggi, P.: On the population of supernova remnants in the Large Magellanic Cloud observed with XMM-Newton. Technische Universität München 2015.

## Master Theses

Simm, T.: AGN optical variability in the PAN-STARRS1 survey. Ludwig-Maximilians-Universität München 2015.

Weber, J.: Test and Characterization of the GRAVITY Laser Metrology Injection. Technische Universität München 2015.

## Bachelor Theses

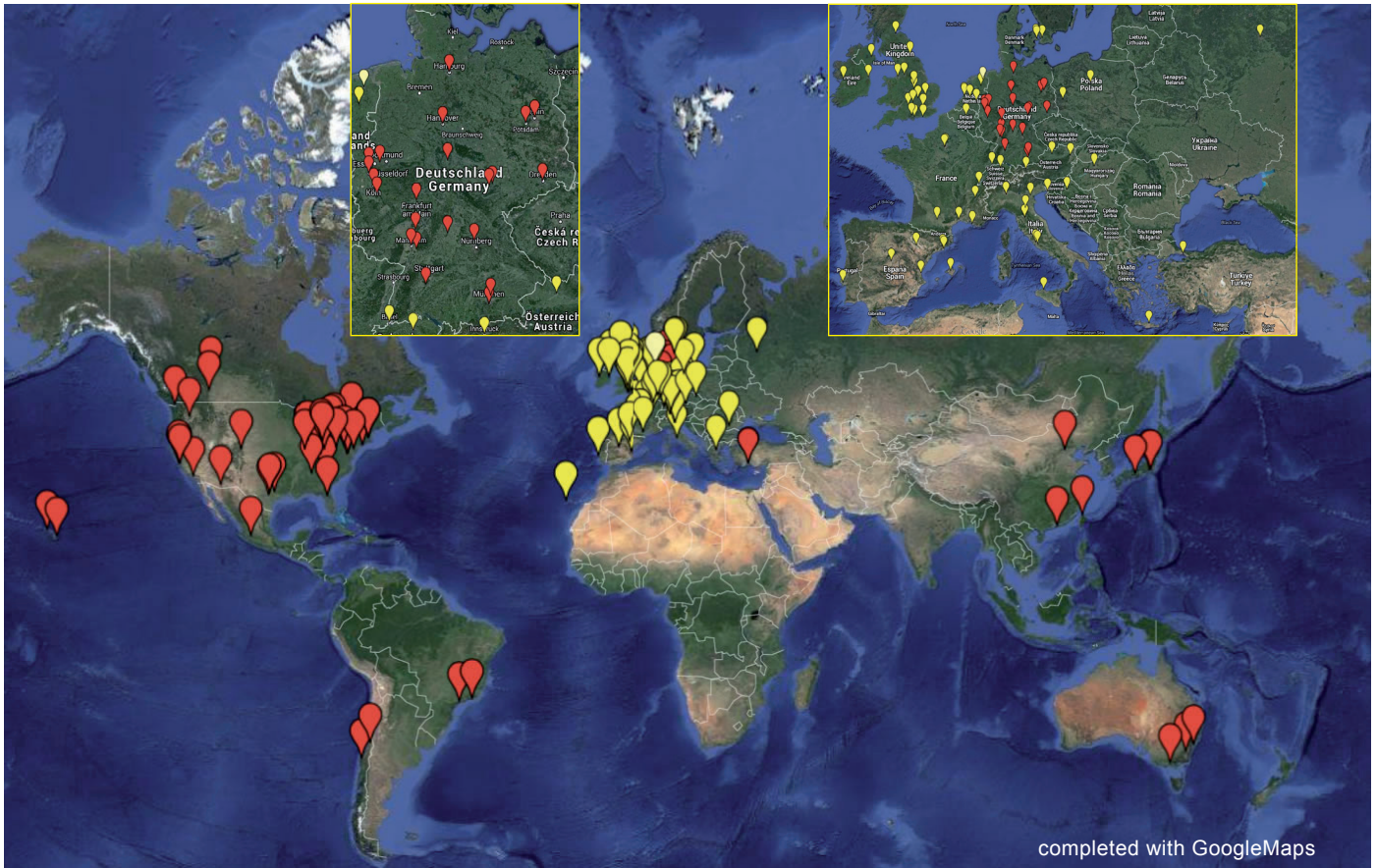
Haberland, M.: Massebestimmung supermassiver schwarzer Löcher mit Reverberation Mapping. Ludwig-Maximilians-Universität München 2015.

Unterauer, E.: Altersbestimmung von Zwerggalaxien: die synthetic Color-Magnitude-Diagramm Methode. Ludwig-Maximilians-Universität München 2015.

Gillhuber, M.: Entwicklung und Realisierung einer Schrittmotorenregelung zur Bestimmung von Positionierungsgenauigkeiten im Bogensekundenbereich mit abschließender Eignungsbewertung für die Instrumentalisierung am Very Large Telescope. Hochschule für Angewandte Wissenschaften Landshut 2015.

# Collaborations / Transfer of Know How

## Scientific Collaborations by Countries



### Australia

Australian National University, Canberra: Galaxienentstehung.

CSIRO Astronomy and Space Science, Epping: CAS-Theory.

Monash University, Melbourne: Nukleare Astrophysik.

Swinburne University of Technology, Victoria: Millisecond Pulsars.

University of Western Sydney: Magellanic Clouds.

### Austria

Universität und TU Wien: Herschel-PACS; MICADO; ATHENA.

Universität Innsbruck: MICADO.

Universität Linz: MICADO.

Universität Wien, Wien: CAS-Theory.

RICAM Linz: MICADO.

### Belgium

CSL Liège, Katholieke Universiteit Leuven: Herschel-PACS; INTEGRAL-Spectrometer SPI.

### Brasil

Universidade de Sao Paulo: Galaxienentstehung.

Observatorio Nacional, Rio de Janeiro: DES.

Centro Brasileiro de Pesquisas, Rio de Janeiro: DES.

Universidade Federal do Rio, Rio de Janeiro: DES.

### Canada

Dunlap Observatory, Richmond Hill: First Hydrostatic Cores (FHSCs).

NRC - Herzberg, Ottawa: Turbulence, Superbubbles and First Hydrostatic Cores (FHSCs).

University of Alberta, Edmonton (Alberta): Turbulence.

University of Calgary: Turbulence.

University of Toronto: CAS-Observations.

University of Victoria, Victoria: Turbulence; superbubbles; First Hydrostatic Cores (FHSCs).

University of Waterloo, Waterloo: Herschel HIFI.

University of Western Ontario, London (Ontario): Turbulence.

### Chile

Joint ALMA Observatory: CAS-Observations.

Universidad de Concepcion: Röntgen-Doppelsternsysteme.

Universidad Catolica Santiago: Röntgen-Doppelsternsysteme.

**China**

Donghua University, Shanghai: CAS-Theory.

Institute for High-Energy Physics (IHEP), Peking: AGN und unidentifizierte Gammaquellen von COMPTEL und INTEGRAL.

University of Hongkong: Strahlungsmechanismen von Pulsaren vom Röntgen bis zum Gammabereich.

**Croatia**

Ministry of Science and Technology, Zagreb: CAST.

**Denmark**

Dänemarks Technische Universität: ATHENA.

University of Copenhagen: First Hydrostatic Cores.

**Finland**

University of Helsinki, Helsinki: CAS-Theory.

**France**

Aix-Marseille University, Marseille: CAS-Theory.

CEA, Saclay: INTEGRAL-Spektrometer SPI; Herschel-PACS; CAST; EUCLID; SPICA; SVOM; Molecular Clouds; ATHENA.

Centre d'Etude Spatiale des Rayonnements (UPS), Toulouse: INTEGRAL-Spektrometer SPI.

IAP Paris: Nukleare Astrophysik.

Institut de Planétologie et d'Astrophysique de Grenoble, Grenoble: CAS-Theory, CAS-Observations.

Laboratoire d'Astrophysique de Marseille (LAM): EUCLID; Gamma-Ray Bursts.

Laboratoire Univers et Particules de Montpellier, Montpellier: Cosmic-ray propagation in molecular clouds.

IPAG Grenoble: GRAVITY; MICADO; Astrochemistry.

OAMP Marseille: Herschel-PACS.

Observatoire de Paris (GEPI): MICADO.

Observatoire de Paris (LESIA): MICADO.

ONERA, Meudon: MICADO.

Observatoire de Paris-Meudon: GRAVITY.

Universite Paris Diderot, Paris: CAS-Observations.

**Germany**

Astrophysikalisches Institut Potsdam: eROSITA; XMM-Newton; GAVO; OPTIMA; ARGOS; HETDEX.

DLR-Köln Porz: Rosetta Lander (Philae).

European Southern Observatory (ESO), Garching: GRAVITY; Galaxienentstehung; Nukleare Astrophysik; MICADO; ERIS; Black Hole Cam; Infrared Dark Clouds, CAS-Observations.

Fraunhofer Institut für Integrierte Schaltungen, Erlangen: Mikroelektronikentwicklungen; ATHENA.

Heinrich-Heine-Universität, Düsseldorf: Soft Matter Physics.

Institut für Astronomie und Astrophysik Tübingen (IAAT):

XMM-Newton; eROSITA; ATHENA.

Institut für Astrophysik Göttingen: MICADO.

Institut für Festkörperphysik und Werkstoff-Forschung, Dresden: Entwicklung weichmagnetischer Werkstoffe.

Institut für Materialphysik im Weltraum, Köln: Glasübergänge.

Landessternwarte Heidelberg-Königstuhl: Nahinfrarotspektrograph LUCI für LBT; Galaxienentstehung, ARGOS.

Laser Zentrum Hannover: Development of advanced Filters for MICADO; coatings for GRAVITY; dichroics for ARGOS.

Ludwig-Maximilians-Universität (Universitäts-Sternwarte), München: MICADO; HETDEX; eROSITA.

Maier-Leibnitz Laboratorium, Garching: eROSITA.

Max-Planck-Institut für Astronomie, Heidelberg: GRAVITY; LUCI; Herschel-PACS; PanSTARRS; SDSS; ARGOS; MICADO; EUCLID, CAS-Observations.

Max-Planck-Institut für Astrophysik, Garching: GAVO; SDSS; OPTIMA; eROSITA, Prestellar Cores.

Max-Planck-Institut für Gravitationsphysik, Potsdam: Black Hole Cam.

Max-Planck-Institut für Physik, Werner Heisenberg Institut, München: MPI Halbleiterlabor, Entwicklung von CCDs; Active Pixeldetektoren (APS); JFET-Elektronik für den Röntgenbereich; CAST; eROSITA.

Max-Planck-Institut für Radioastronomie, Bonn: ARGOS; Black Hole Cam; Molecular Clouds; Turbulence.

Physikalisch-Technische Bundesanstalt Berlin: eROSITA; TES Bolometer SQUID-Ausleseschaltung.

Technische Universität Berlin: Interstellares Medium.

Technische Universität Darmstadt: CAST.

Technische Universität München: Nukleare Astrophysik.

Thüringer Landessternwarte Tautenburg: GROND; Gamma-Ray Bursts.

Trans MIT, Gießen: Pulse tube cooler for GRAVITY.

Universität Bochum: LUCI.

Universität Bonn: Test von Pixeldetektoren für ATHENA; eROSITA; EUCLID.

Universität Düsseldorf: ERC Advanced Grant, CAS-Theory.

Universität Erlangen (ECAP): eROSITA; ATHENA.

Universität Hamburg: eROSITA; OPTIMA (Flarestars).

Universität Heidelberg: ATHENA; XFEL, CAS-Observations.

Universität Jena: Isolierte Neutronensterne; Nukleare Astrophysik.

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

Universität Mannheim: ATHENA; XFEL.

Universität Würzburg: AGADE.

**Greece**

University of Crete and Foundation for Research and

Technology Hellas (FORTH), Heraklion: Ausbau und Betrieb der Skinakas Sternwarte; Untersuchung von windakretierenden Röntgendoppelsternsystemen; Entwicklung und Einsatz des OPTIMA Photometers; optische Identifikation und Monitoring von Röntgen-AGN, Novae.

### Hungary

Konkoly Observatory, Budapest: Herschel-PACS.

### Ireland

National University of Ireland, Galway: High Time Resolution Astronomy.

University College Dublin: Fermi/GBM.

### Israel

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

Weizmann Institut, Rehovot: Galaktisches Zentrum.

### Italy

Brera Astronomical Observatory: Himmelsdurchmusterung Galaxienhaufen.

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

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

INAF Arcetri: ARGOS; LBT; ERIS; Infrared Dark Clouds; First Hydrostatic Cores, CR in Molecular Clouds.

INAF Padua: Herschel-PACS; LBT; MICADO.

INAF Roma: LBT; Nukleare Astrophysik.

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

INFR Frascati: SIDDHARTA.

Istituto di Fisica dello Spazio Interplanetario (CNR), Frascati: Herschel-PACS.

OAA/LENS Firenze: Herschel-PACS.

Politecnico di Milano: rauscharme Elektronik; Röntgendetektorenentwicklung.

University Bologna: EUCLID.

### Japan

National Astronomical Observatory of Japan, Mitaka/Tokio: CAS-Observations.

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

University of Osaka: Astro-H.

### Mexico

Centro de Radioastronomía y Astrofísica, Universidad Nacional Autónoma de México, Jiquilpan: Infrared Dark Clouds.

### Poland

Nicolaus Copernicus (ZAMK), Torun: Pulsars Astronomic-

al Centers; ATHENA.

University Zielona Gora: OPTIMA.

### Portugal

SIM Lissabon und Porto: GRAVITY.

### Russia

Staatliche Technische Universität Bauman, Moscow: Stark gekoppelte Systeme, Time-domain spectroscopy, CAS-Theory, CAS-Laboratory.

Space Research Institute (IKI) of the Russian Academy of Science, Moscow: eROSITA/Spektrum Röntgen-Gamma.

Skobeltsyn Institute of Nuclear Physics, Moscow: Nukleare Astrophysik; Gamma-Ray Bursts; AGADE.

### Spain

Centro de Investigaciones Energeticas, Medioambientales y Tecnológicas, Madrid: DES.

ESAC, Madrid: XMM-Newton Science Operations Center; INTEGRAL Science Operations Center; Herschel Science Operations Center.

Instituto de Astrofisica de Canarias (IAC), Laguna: Herschel-PACS.

Instituto de Ciencias del Espacio, Bellaterra: DES.

Institut de Fisica d'Altes Energies, Barcelona: DES.

Universität Valencia, Department de Astronomia, Valencia: INTEGRAL-Spektrometer SPI.

Universidad de Zaragoza: CAST.

Observatorio Astronomico de Mallorca: Novae; Kometen.

Observatorio Astronómico Nacional, Madrid: CAS-Observations.

### Sweden

University Lund/Observatory: OPTIMA.

### Switzerland

CERN, Geneva: CAST.

ETH Zürich: ERIS.

Observatoire de Genève Sauverny, Geneva: ISDC/INTEGRAL; Nukleare Astrophysik; EUCLID.

Universität Basel: Nukleare Astrophysik.

University of Zurich: Infrared Dark Clouds.

### Taiwan

National Central University, Chungli; PanSTARRS.

National Tsing Hua University, Hsinchu: CAS-Observations.

### The Netherlands

ESTEC, Noordwijk: XMM-Newton-TS-Spiegelkalibration; CCD Entwicklung; Radiation Performance

Instrument; INTEGRAL; EUCLID.

JIVE Dwingeloo: Black Hole Cam.

NOVA (Leiden, Groningen, Amsterdam): MICADO.  
 Leiden University, Leiden: CAS-Observations, CAS-Theory.  
 Radboud University, Nijmegen: Black Hole Cam.  
 SRON, Utrecht: Chandra-LETG; TES für SPICA.  
 University of Groningen, Kapteyn Institute: Rekonstruktion der Dichteverteilung im Universum; EUCLID; Dynamical-Chemical Models.

### Turkey

Bogazici University, Istanbul: CAST.

### UK

Queen's University, Belfast: PanSTARRS.  
 John Moores University, Liverpool: Himmelsdurchmusterung Galaxienhaufen; Infrared Dark Clouds, CAS-Observations.  
 Open University, Milton Keynes: Kataklysmische Variablen; Novae; ATHENA.  
 Rutherford Appleton Laboratory, Council for the Central Laboratory of the Research Councils, Swindon: SIS-Junctions.  
 SKA Organisation, Jodrell Bank Observatory, Manchester: First Hydrostatic Cores.  
 University of Cambridge: DES.  
 University College London, MSSL: High Energy Pulsars. EUCLID; DES.  
 University of Durham: PanSTARRS.  
 University of Edinburgh: DES; PanSTARRS.  
 University of Leeds: CAS-Observations.  
 University of Leicester: XMM-Newton Datenanalyse; ATHENA; Swift.  
 University of Manchester, Manchester: CAS-Observations.  
 University of Nottingham: DES.  
 University of Portsmouth: DES.  
 University of Sussex, Brighton: DES.  
 University of Southampton: Magellanic Clouds.  
 United Kingdom Astronomy Technology Centre (UKATC): EUCLID.

### USA

Argonne National Laboratory: DES.  
 Brookhaven National Laboratory: strahlenharte JFET-Elektronik; strahlenharte Detektoren.  
 California Inst. of Technology, Pasadena: X-ray survey.  
 CfA, Cambridge: ATHENA/WFI; XMM-Newton/Chandra Kalibration.  
 Clemson University: Gamma-Ray Bursts; Nukleare Astrophysik.  
 Fermilab, Batavia: DES.  
 Harvard University: PanSTARRS.  
 Harvard-Smithsonian Center for Astrophysics, Cam-

bridge: Molecular cloud cores chemistry and dynamics.  
 Institute for Astronomy, Hawaii, Honolulu: Galaxienentstehung; PanSTARRS; NIR Kamera für Wendelstein.  
 Jet Propulsion Laboratory, Pasadena: EUCLID.  
 Johns Hopkins University: PanSTARRS.  
 Joint Astronomy Center, Hilo (Hawaii): Turbulence and superbubbles.  
 Marshall Space Flight Center, Huntsville: Fermi Gamma-Ray Burst Monitor; XMM-Newton und Chandra Beobachtungen von Neutronensternen, Pulsaren und Supernova-Überresten.  
 NASA/Ames Research Center, Mofett Field (CA): MHD shocks.  
 NASA/Goddard Space Flight Center, Greenbelt (MD): INTEGRAL-Spektrometer SPI; Swift.  
 NASA Herschel Science Center (NHSC), Pasadena: Herschel/PACS.  
 NOAO, Tucson: DES.  
 Ohio State University, Columbus: DES; LBT.  
 Pacific Northwest National Laboratory (PNNL), Richland: CAST.  
 Pennsylvania State University: HETDEX; Swift.  
 Research Corporation, Tucson: LBT.  
 San Jose State University: MHD shocks.  
 SLAC, Stanford: CAMP; DES.  
 Smithsonian Astrophysical Observatory, Cambridge: Chandra-LETGS; PanSTARRS; Röntgendoppelsterne in M31.  
 Space Telescope Science Institute, Baltimore: Galaxienentstehung; PanSTARRS, Turbulence.  
 Stanford University: DES; Fermi/LAT; Fermi/GBM.  
 Texas A & M University, College Station: DES.  
 Texas State University, San Marcos: HETDEX.  
 University of Arizona, Tucson: Kosmische Strahlung; Planetenentstehung; LBT; ARGOS, CAS-Observations.  
 University of California, Berkeley: MPG/UCB-Kollaboration; FAST; INTEGRAL-Spektrometer SPI, Superbubbles.  
 University of California, Santa Cruz: DES.  
 University of Chicago: DES.  
 University of Colorado, Boulder (Co): Superbubbles.  
 University of Florida, Gainesville: Infrared Dark Clouds.  
 University of Illinois at Urbana-Champaign: DES.  
 University of Massachusetts, Amherst: CAS-Observations.  
 University of Michigan: DES.  
 University of Pennsylvania: DES.  
 University of Pittsburgh: Galaxienentstehung.  
 University of Texas, Austin: Galaxienentstehung; HETDEX, Turbulence.  
 University of Toledo: Galaxienentstehung.  
 Yale University, New Haven: CAS-Observations.

## Multinational Collaborations - Projects

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

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

ATHENA - Advanced Telescope for High Energy Astrophysics: Dänemarks Technische Universität, Dänemark; Nikolaus Kopernikus Astronomical Center, Polen; Universität Wien, Österreich; 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.

Black Hole Cam ERC Synergy Grant: ESO Garching, MPI für Gravitationsphysik, MPI für Radioastronomie, Germany; Radboud University, JIVE Dwingeloo, The Netherlands.

BOSS - Baryon Oscillation Spectroscopic Survey: SDSS-IV Collaboration.

CAST - CERN Solar Axion Telescope: CERN Geneva, Switzerland; TU Darmstadt, MPI für Physik (WHL) München, Germany; Universidad de Zaragoza, Spain; Bogazici University Istanbul, Turkey; Ministry of Science and Technology Zagreb, Croatia; CEA, Saclay, DAPNIA/-SED, France; Pacific Northwest National Laboratory, Richland, USA.

CDFS - The Chandra Deep Field South: ESO Garching, AIP, Germany; IAP Paris, France; Osservatorio Astronomico Trieste; Istituto Nazionale di Fisica Nucleare Trieste, Italy; Associated Universities Washington, Johns Hopkins University Baltimore, Space Telescope Science Institute Baltimore, USA; Center for Astrophysics Hefei, China.

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-INA, Bologna, Dipartimento di Astronomia, Università Padova, Dipartimento di Fisica, Università degli Studi Roma Tre, Italy; Harvard-Smithsonian Centre for Astrophysics, Cambridge, Dept. of Physics, Carnegie Mellon University, Pittsburg, Institute for Astronomy, University of Hawaii, California Institute of Technology, Pasadena, Dept. of Astronomy, Yale University, USA; INTEGRAL Science Data Centre, Versoix, Switzerland; Laboratoire d'Astrophysique de Marseille, France.

DES - Dark Energy Survey: LMU München, Excellence Cluster Universe, Germany; The Fermi National Accelerator Laboratory (Fermilab), University of Chicago, NOAO, University of Michigan, University of Pennsylvania, Uni-

versity 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 de Pesquisas Fisicas, Universidade Federal do Rio, Brasilien; Instituto de Ciencias dei Espacio, Institut de Fisica d'Altes Energies, Centro de Investigaciones Energeticas Medioambientales y Tecnologicas, Spain.

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.

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.

EUCLID - ESA Mission to map the Dark Energy: ESA; CEA Saclay, LAM, France; University Bologna, INAF, Italy; MSSL, Durham University, UKATC UK; STScI, USA; MPIA Heidelberg, Universität Bonn, Germany.

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

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

FP7 Opticon JRA1 - Adaptive Optics: INAF Padova, INAF Arcetri, Italy; LAM Marseille, LAOG Grenoble; LESIA Paris, ONERA Paris, France; KIS Freiburg, MPIA Heidelberg, Germany; NOVA Leiden, The Netherlands; UKATC Edinburgh; University Durham, UK.

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

Herschel/PACS - Photodetector Array Camera and Spectrometer: CSL Liège, Katholieke Universiteit Leuven, Belgium; MPIA Heidelberg, Universität Jena, Germany; OAA/LENS Firenze, IFSI Roma, OAP Padova, Italy; IAC La Laguna, Spain; Universität und TU Wien, Austria; IGRAP

Marseilles, CEA Saclay, France; Konkoly Observatory, Hungary; NHSC Pasadena, USA.

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

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.

Lockman Hole, optical/NIR identifications: Astrophysikalisches Institut Potsdam, ESO Garching, Germany; Istituto di Radioastronomia del CNR Bologna, Italien; Associated Universities Washington, California Institute of Technology Pasadena, Institute for Astronomy Honolulu, Princeton University Observatory, Pennsylvania State University Park, USA; Subaru Telescope NAO Hilo, Japan.

LUCI (Instrument for LBT): LSW Heidelberg, MPIA, Universität Bochum, Germany.

MICADO - Multi-Adaptive Optics Imaging Camera for Deep Observations: LMU (USM), MPIA Heidelberg, IFA Göttingen, Germany; INAF-OAPD Padova, Italy; A\* (partnership of University Vienna, University Innsbruck, University Linz and RICAM Linz), Austria; NOVA (federation of Dutch university astronomy departments of the universities in Amsterdam, Groningen, Leiden, Nijmegen), The Netherlands; CNRS/INSU (representing LESIA, GEPI and IPAG), Paris, France.

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.

PanSTARRS - Panoramic Survey Telescope & Rapid Response System: MPIA Heidelberg, Germany, University of Hawaii, Harvard University, USA, Johns Hopkins Univ. Baltimore, MD, USA, Universities of Durham, Edinburgh, Belfast, UK.

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, The 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.

4D Engineering, Gilching, Germany: Software development for GRAVITY.

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

af inventions, Braunschweig: FPGA Programmierung for eROSITA.

Airbus Defense and Space, Munich: EUCLID design study, eROSITA.

Albedo GmbH, Neubiberg; Soft- and hardware developments for PK-3 Plus; electronics for SDD readout.

AMOS, Liège, Belgium: High resolution grating for ERIS.

Array Electronics, Eggenstein: DAQ development OPTIMA.

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

Bonerz engineering, Weiler-Simmerberg: printed circuit board development, electronics development.

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

ESL GmbH, Berlin: Manufacturing of circuit boards.

Fraunhofer IOF, Jena: Coating for ERIS.

Freyer GmbH, Tuningen: PANTER, parts for LUCI, eROSITA.

Guido Lex Werkzeugbau GmbH, Miesbach: parts for LUCI.

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

HPS München: Multi-Layer Insulation (MLI) for eROSITA.

IABG, Ottobrunn: Environmental testing eROSITA.

II-VI Deutschland, Weiterstadt: ZnS prototypes for ERIS grating.

Ingenieurbüro Buttler, Essen: Development of front-end electronics for ATHENA and eROSITA.

Ingenieurbüro Josef Eder, Hilgertshausen: System Engineering for eROSITA, GRAVITY, ATHENA, ERIS.

Ingenieurbüro Weisz, München: Design and mechanical engineering for LUCI, ERIS and MICADO.

Invent GmbH, Braunschweig: CFRP-Telescopestructure for eROSITA.

IRIDIAN Spectral Technologies, Ottawa, Canada: Filters for ERIS Spectrometer.

Korth Kristalle GmbH, Kiel: Lenses for ERIS Spectrometer.

Kugler GmbH, Salem: GRAVITY, ERIS.

Laser Components GmbH, Olching: ERIS Filters.

Laserjob GmbH, Grafrath: Development of X-ray baffles for eROSITA.

Luxel Corporation, USA: Filter for eROSITA.

Media Lario Technologies, Borasio Parini, Italy: eROSITA mirror system.

MENLO Systems, Martinsried, Germany: Metrology Laser for GRAVITY.

MOOG Inc., East Aurora, USA: high pressure valves for eROSITA.

OHB System AG, München: Plasma-crystal experiments on the ISS; PKE; PK-3 Plus; PK-4; EUCLID design study.

PNSensor, München: Development and Manufacturing of semiconductor detectors; Mounting of semiconductor Systems; ARGOS.

RUAG Austria: Telescope-Cover-Mechanism for eROSITA.

Technotron, Lindau: Development and manufacturing of electronics boards for eROSITA.

TransMIT, Giessen, Germany: pulse tube cooler for GRAVITY.

WINLIGHT OPTICS, Pertuis, France: Beam analyzer optics for GRAVITY.

ZÜND Precision Optics, Diepoldsau, Switzerland: roof prisms for GRAVITY.



## Activities in Transfer of Know-How

The high number of cooperations with industry and other research groups leads to a natural transfer of scientific and technical know-how, especially if orders are given to the industry. In contrast, we list in the following those cooperations which are financed by the industry as well as patents and licenses.

### A) Research Cooperations Financed by Industry

Dr. Johannes Heidenhain-Stiftung, Traunreut: Technologische Entwicklung auf dem Gebiet der Röntgenoptik und Röntgenspektroskopie; Entwicklung schneller Detektoren für Infrarot- und Röntgenstrahlung.

OHB-System GmbH, Bremen: Voruntersuchung für einen flexiblen S/W Simulator für Kleinsatelliten.

PNSensor, München, Aufbau und Test eines Röntgen-Gamma-Strahlen-Detektors.

### B) Licences

Baader Planetarium GmbH, Mammendorf: Reflexionsgitter Spectrograph für Lehrzwecke.

PNSensor, München, Detektortechnologie.

Baader Planetarium GmbH, Mammendorf: Baches Echelle Spectrograph.

### C) Cooperations with Universities (by Contract)

Detector Development:

Universität Mannheim, ASIC Entwicklung.

Politecnico di Milano, Analog-Elektronik Entwicklung.

Universität Jena, Entwicklung und Fertigung von Röntgen-Zonenplatten.

### D) Patents - Activities in 2015

MPE held a total of 10 patents at the end of 2015.

One patent was applied for.