

Garching

Max-Planck-Institut für extraterrestrische Physik

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0 Allgemeines

Das Max-Planck-Institut für extraterrestrische Physik (MPE), gegründet 1963, befaßt sich mit Themen der Astrophysik und Plasmaphysik, die sich sechs großen Bereichen zuordnen lassen: (i) *Großräumige Struktur und Kosmologie*, (ii) *Galaxien und Galaxienentwicklung*, (iii) *Massive Schwarze Löcher und Aktive Galaxien*, (iv) *Sternentwicklung und Interstellares Medium*, (v) *Physik des Sonnensystem* und (vi) *Physik Komplexer Plasmen*. Dabei werden überwiegend experimentelle Methoden angewandt, aber auch theoretische Untersuchungen durchgeführt. Der Name des Instituts bezieht sich einerseits auf den Gegenstand der Forschung: die Physik des Weltraums, andererseits auf die Forschungsmethoden: viele unserer Experimente werden notwendigerweise oberhalb der dichten, absorbierenden Erdatmosphäre mit Flugzeugen, Raketen, Satelliten und Raumsonden durchgeführt. In zunehmendem Maße setzen wir aber, vor allem im optischen und Infrarotbereich, auch Instrumente an erdgebundenen Teleskopen ein. Ergänzt werden unsere Untersuchungen durch Experimente im Labor.

Methodisch lassen sich die Forschungsaktivitäten des MPE in mehrere Bereiche einteilen. In den astrophysikalischen Forschungsbereichen wird die Strahlung entfernter Objekte mit Teleskopen in den Millimeter/Submillimeter-, Infrarot-, Optischen-, Röntgen- und Gammabereich gemessen. Der hierbei überdeckte Teil des elektromagnetischen Spektrums umfasst mehr als zwölf Dekaden. Die untersuchten Objekte reichen von nahen Kometen bis zu den fernsten Quasaren, von winzigen Neutronensternen bis zu Galaxienhaufen, den größten bekannten Formationen im Kosmos. Mit der Entdeckung eines neuen Plasmazustandes ("Plasmakristall") hat sich das Forschungsfeld "Komplexe Plasmen" aufgetan, das hauptsächlich in Laborexperimenten betrieben wird. Um die Gravitation "auszuschalten" werden inzwischen auch Experimente auf Parabelflügen und auf der Internationalen Raumstation durchgeführt. Die Theoriegruppe des Instituts beteiligt sich gruppenübergreifend an der Interpretation der Beobachtungen und Messungen. Die direkte Wechselwirkung von Beobachtern, Experimentatoren und Theoretikern im Hause ist ein Merkmal unseres Arbeitsstils und führt oft im direkten Wechselspiel von Hypothesen und Beobachtungstatsachen zu einer frühen Erkennung neuer Zusammenhänge und damit auch von vielversprechenden neuen Forschungsrichtungen.

Zwei technologische Einrichtungen des MPE sind von besonderer Bedeutung: Die 130 m lange Vakuumanlage *Panther* zum Test von Röntgenteleskopen in Neuried bei München und das zusammen mit dem Max-Planck-Institut für Physik betriebene *Halbleiterlabor* in München-Neuperlach, in dem Strahlungsdetektoren für unsere Raumfahrtexperimente entwickelt werden. Auch durch diese Einrichtungen gewinnt der Transfer von neuen Verfahren

und Methoden in die industrielle Anwendung immer mehr an Bedeutung. Besonders hervorzuheben sind dabei ein weiter Bereich von Anwendungen für die von uns entwickelten Halbleiterdetektoren, die erfolgreiche Verwendung mathematischer Methoden der nichtlinearen Dynamik in der Medizin, sowie die Anwendungen der Plasmaphysik in der Medizin. Im Rahmen dieser Transferaktivitäten hält das MPE derzeit 35 Patente.

Neben der Forschung nimmt unser Institut auch universitäre Ausbildungsaufgaben wahr. Mehr als zehn MPE-Wissenschaftler sind als Hochschullehrer an zahlreichen Universitäten tätig und betreuen studentische Forschungsarbeiten, wie z.B. Bachelor-, Master-, Diplom- und Doktorarbeiten. Die Mehrzahl davon an den beiden Münchner Universitäten, aber auch an anderen deutschen Hochschulen und sogar im Ausland. Darüber hinaus veranstalten wir spezielle Seminare und Symposien zu den im Institut behandelten Forschungsgebieten, häufig in Zusammenarbeit mit Universitätsinstituten. Unsere sehr erfolgreiche "International Max-Planck Research School (IMPRS) on Astrophysics" an der Ludwig-Maximilians-Universität (LMU) München brachte eine wesentliche Intensivierung der Doktorandenausbildung in den Raum Garching/München. An dieser im Jahre 2000 gegründeten Graduate School sind neben unserem Institut und dem Max-Planck-Institut für Astrophysik (MPA) noch das Institut für Astronomie und Astrophysik der LMU und die Europäische Südsternwarte beteiligt. Mit typisch 80 Doktoranden, die an diesem Programm teilnehmen, gehört die IMPRS on Astrophysics zu den größten Einrichtungen dieser Art weltweit.

1 Personal und Ausstattung

1.1 Personalstand

Direktoren und Professoren:

Prof. Dr. R. Bender (Geschäftsführung), Optische und Interpretative Astronomie; Prof. Dr. R. Genzel, Infrarot- und Submillimeter-Astronomie; Prof. Dr. K. Nandra, Hochenergie-Astrophysik; Prof. Dr. G. Morfill, Theorie und komplexe Plasmen; Prof. Dr. G. Haerendel (emeritiert); Prof. Dr. R. Lüst (emeritiert); Prof. Dr. K. Pinkau (emeritiert); Prof. Dr. J. Trümper (emeritiert).

Auswärtige wissenschaftliche Mitglieder:

Prof. Dr. E. van Dishoeck (Universität Leiden, Niederlande); Prof. Dr. V. Fortov (IHED, Moskau, Russland); Prof. Dr. J. Kormendy (University of Texas at Austin, USA); Prof. Dr. R. Z. Sagdeev (University of Maryland, College Park, USA); Prof. Dr. M. Schmidt (CALTECH, Pasadena, USA); Prof. Dr. Y. Tanaka (JSPS, Bonn; MPE, Deutschland); Prof. Dr. C. H. Townes (UC Berkeley, USA).

Kuratorium:

Dr. L. Baumgarten (ehemaliges Vorstandsmitglied DLR); Prof. Dr. A. Bode (Vizepräsident TU München); J. Breilkopf (Kayser-Threde GmbH, München); H-J. Dürrmeier (ehemalig Süddeutscher Verlag, München); Prof. Dr. W. Glatthaar (ehemaliger Präsident der Universität Witten/Herdecke, Stuttgart, Kuratoriumsvorsitzender); Dr. G. Gruppe (Bayerisches Staatsministerium für Wirtschaft, Verkehr und Technologie, München); Prof. Dr. B. Huber (Rektor der LMU München); Dr. M. Mayer (ehemaliges Mitglied des Bundestages, Höhenkirchen); Min.Dir. L. Meyer (Bundesministerium für Wirtschaft und Technologie, Berlin); Prof. Dr. E. Rohkamm (Blohm & Voss GmbH, Hamburg).

Fachbeirat:

Prof. Dr. J. Bergeron (Institute d'Astrophysique de Paris, Frankreich); Prof. Dr. M. Colless (Austrian Astronomical Observatory, Australien); Prof. Dr. K. Freeman (Australian National University, Australien); Dr. N. Gehrels (NASA GSFC, USA); Prof. Dr. F. Harrison (CALTECH, USA); Prof. Dr. R. Kennicutt (University of Cambridge, UK); Prof. Dr. E. Quataert (University of California, USA); Prof. Dr. G. Stacey (Cornell University, USA).

Fachübergreifende Fachbeiräte:

Prof. Dr. G. Anton (Universität Erlangen-Nürnberg, Deutschland); Prof. Dr. M. Perryman (ESA/ESTEC, Niederlande).

Wissenschaftliche Mitarbeiter und Angestellte

A. Infrarot-und Sub-mm-Astronomie

A. Agudo Berbel, Dr. K. Bandara, Dr. S. Berta, Dr. N. Blind, Dr. S. Bruderer, Dr. A. Contursi, Dr. R. Davies, Dr. J.A. de Jong, Dr. K. Dodds-Eden, Dr. V. Doublier Pritchard, Dr. F. Eisenhauer, Dr. D. Fedele, Dipl.-Phys. H. Feuchtgruber, Dr. N. Förster Schreiber, Dr. N. Geis, Dr. S. Gillessen, Dr. J. Grácia Carpio, A. Gräter, S. Harai-Ströbl, M. Hartl, Dr. R. Hofmann, Dr. R. Katterloher, A. Kleiser, H. Krombach, Dr. J. Kurk, Dr. D. Lutz, Dr. B. Magnelli, Dr. T. Müller, S. Osterhage, Dr. A. Poglitsch, Dr. P. Popesso, Dr. W. Raab, Dr. S. Rabien, Dr. D. Rosario, Dr. A. Saintonage, Dr. E. Sturm, Dr. L. Tacconi, Dr. E. Vilenius, Dr. M. Wetzstein, Dr. E. Wisnioski, Dr. E. Wuyts, Dr. S. Wuyts, J. Zanker-Smith.

Doktoranden/Diplomanden/Master/Bachelor:

P. Buschkamp, N. Famulok, T. Fritz, A. Karska, C. Kister, P. Lanmg, M. Lipa, C. Loose, K. Lutz, M. Lüst, D. Moch, G. Orban di Xivry, O. Pfuhl, A. Schauer.

B. Hochenergie-Astrophysik

Dr. R. Andritschke, Prof. Dr. W. Becker, Prof. Dr. H. Böhringer, B. Boller, Prof. Dr. T. Boller, Dr. A. Bongiorno, Dr. H. Bräuninger, Dr. M. Brightman, Dr. H. Brunner, Dr. M. Brusa, Dr. W. Burkert, A. Buron, Dr. V. Burwitz, Dr. W. Collmar, Dr. K. Dennerl, Dr. R. Diehl, Dr. D. Dwelly, Dr. J. Elbs, Dipl.-Ing. J. Eder, Dr. R. Fassbender, Dr. A. Finoguenov, W. Frankenhuisen, Dr. M. Freyberg, Dr. P. Friedrich, Dr. M. Fürmetz, R. Gaida, A. Georgakakis, Dr. J. Greiner, Dr. D. Gruber, Dr. F. Guglielmetti, Dr. F. Haberl, A. Hahn, K. Hartmann, Dipl.-Math. G. Hartner, Dr. M. Henze, Dr. A. von Kienlin, Dr. A. Kann, J.W. Kim, Dr. K. Kretschmer, Dr. N. Meidinger, Dr. A. Merloni, Dr. A. Nastasi, Dipl.-Phys. E. Pfeffermann, Dr. W. Pietsch, Dr. P. Predehl, Dr. A. Rau, T. Rommerskirchen, Dr. J. Sanders, Dr. S. Savaglio, Dr. P. Schady, G. Schaller, Dr. F. Schopper, Dr. A. Stefanescu, Dr. A. Strong, Prof. Dr. L. Strüder, Dr. R. Sturm, Dr. W. Voges, S. Walther, Dr. A. Winter, Dr. X.-L. Zhang, Dr. F. Ziparo.

Doktoranden/Diplomanden/Master/Bachelor:

F. Alexander, A. Bähr, M.G. Bernhardt, J. Buchner, D. Burlon, R. Capelli, J. Connelly, S. Granato, J. Elliot, G. Erfanianfar, F. Hofmann, J. Holland, L.-T. Hsu, C. Jocham, G. Khachatryan, T. Lauf, P. Maggi, G. Mantovani, M. Mirkazemi, A. Nastasi, F. Olivares, T. Prinz, G. Schmalzer, V. Sudilovsky, M. Tanga, K. Varela, A. Weissmann, H.-F. Yu.

C. Theorie und Komplexe Plasmen

Dr. T. Antonova, Dr. T. Aschenbrenner, Dr. P. Badyopadhyay, Dr. P. Brandt, Dr. W. Bunk, Dr. M. Chaudhuri, Dipl.-Phys. H. Höfner, Dr. A. Ivlev, Dr. S. Khrapak, Dr. C. Knapek, Dr. U. Konopka, Dr. M. Kretschmer, A. Langer, D. Li, Dr. Y. Li, Dr. S. Mitic, Dr. R. Monetti, Dr. T. Nosenko, Dr. M. Pustynnik, Dr. Ch. Räth, Dr. M. Rubin-Zuzic, Dr. H. Scheingraber, Dr. M. Schwabe, Dr. S. Shimizu, Dr. T. Shimizu, Dr. I. Sidorenko, Dr. R. Sütterlin, Dr. L. Taghizadeh, Dr. M. Thoma, Dr. H. Thomas, Dr. V. Yaroschenko, Dr. S. Zhdanov, Dr. J. Zimmermann.

Doktoranden/Diplomanden/Master/Bachelor:

G. Avvisati, V. Boxhammer, C. Du, Y. Du, M. Fink, R. Heidemann P. Huber, J. Jeon, K. Jiang, T. Klämpfl, J. Köritzer, H. Modest, T. Röcker, G. Rossmannith, A. Semenov, L. Wörner.

D. Optische und Interpretative Astronomie

C. Aswathanarayan, Dr. A. Beifiori, Dr. A. Bode, Dr. M. Fabricius, Dr. N. Geis, Prof. Dr. O. Gerhard, Dr. F. Grupp, H. Höfner, Dr. U. Hopp, C. Ingram, Dr. R. Katterloher, Prof. Dr. J. Kormendy, Dr. M. Landriau, Dr. I. Martinez-Valpuesta, Dr. X. Mazzalay, Dr. T. Mendel, Dr. F. Montesano, L. Morganti, Dr. B. Muschiello, M. Neumann, Dr. S. Phleps, Dr. S. Prianto-Rusli, F. Raison, Dr. R. Saglia, Dr. K. Saha, Dr. A. Sanchez, Dr. R. Senger, Dr. P. Steele, Dr. J. Thomas, Dipl.-Ing. C. Vogel, Dr. C. Wegg, Prof. Dr. J. Weller, Dr. M. Williams, Dr. D. Wilman, Dr. H. Ziaeeepour.

Doktoranden/Diplomanden/Master/Bachelor:

A. Beck, A. Brucalassi, M. Cappetta, J. Chan, S. Chatzopolous, M. Fossati, M. Häuser, S. Kulkarni, A. Longobardi, K. Markovic, A. Monna, L. Morganti, M. Opitsch, S. Pekruhl, G. Rosotti, S. Rudkee, S. Salazar-Albornoz, H. Schlagenhauser, P. Wulstein, J. Zendejas.

E. Unabhängige Forschungsgruppen

a) Forschungsgruppe Prof. Dr. A. Burkert

Prof. Dr. A. Burkert, Dr. M. Krause, Dr. M. Schartmann.

Doktoranden/Diplomanden/Master/Bachelor:

C. Alig, M. Behrendt.

b) Forschungsgruppe Dr. S. Khochfar

Dr. A. Davis, Dr. V. Dalla Vecchia, Dr. S. Khochfar, Dr. L. Powell, Dr. U. Maio, Dr. E. Neistein, Dr. J.-P. Paardekooper.

Doktoranden/Diplomanden/Master/Bachelor:

B. Agarwal, A. Ballone.

F. Ingenieurbereiche und Werkstätten

a) Elektrotechnik

Dipl.-Ing. S. Albrecht, Dipl.-Ing. (FH) L. Barl, Dipl.-Ing. (FH) W. Bornemann, Dipl.-Ing. (FH) T. Burghardt, D. Coutinho, H. Ciboglu, M. Deuter, A. Emslander, A. Gaster, R. Gressmann, Dipl.-Ing. (FH) T. Hagl, Dipl.-Ing. (FH) O. Hälker, O. Hans, M. Hengmith, Dipl.-Ing. (FH) S. Kellner, Dipl.-Ing. (FH) W. Kink, S. Krämer, P. Langer, R. Lederer, D. Mießner, Dipl.-Ing. (FH) S. Müller, F. Oberauer, Dipl.-Ing. G. Plasoianu, Dipl.-Ing. (FH) C. Rau, J. Reiffers, P. Reiss, T. Rupprecht, M. Schneider, F. Schrey, Dipl.-Ing. K. Tarantik, K. Tomic, Dipl.-Ing. G. Wildgruber, W. Xu, V. Yaroshenko, J. Zanker-Smith, Z. Zhang, Dipl.-Ing. (FH) J. Ziegleder.

b) Mechanik

R. Bayer, T. Blasi, A. Brara, B. Budau, S. Czempel, D. Cziasto, C. Deysenroth, M. Deysenroth, Dipl.-Ing. (FH) K. Dittrich, J. Eibl, P. Feldmeier, J. Gahl, Dipl.-Phys. H. Gemperlein, A. Goldbrunner, J. Hartwig, Dipl.-Ing. (FH) M. Haug, M. Honsberg, D. Huber, F.-X. Huber, Dipl.-Ing. H. Huber, S. Huber, H.J. Kestler, J. Liebhardt, R. Mayr, R. Mayr-Ihbe, Dipl.-Ing. (FH) B. Mican, Dipl.-Ing. (FH) S. Paßlach Dipl.-Ing. (FH) D. Pietschner, M. Plangger, C. Rohe, R. Sandmair, A. Schneider, P. Schnell, C. Schreib, Dipl.-Ing. J. Schubert, W. Schunn, S. Senftleben, F. Soller, P. Straube, R. Strecker, Dipl.-Ing. M. Thiel, Dipl.-Ing. L. Tiedemann.

c) Auszubildende

M. Greil, M. Hiefinger, T. Kratschmann, F. Leimböck, A. Reinold, D. Schuppe.

G. Zentrale DV-Gruppe

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

H. Öffentlichkeitsarbeit

Dr. W. Collmar, Dr. H. Hämmerle.

I. Publikationsunterstützung

R. Hauner, R. Mayr-Ihbe, B. Mory.

J. Bibliothek

E. Blank, E. Chmielewski, C. Hardt.

K. Verwaltung und Allgemeine Dienste

C. Altinger, G. Apold, A. Arturo, T. Bauer, M. Bauernfeind, U. Bitzer, M. Blaschek, U. Cziasto, E. Doll, C. Eicher, M. Ertl, S. Goldbrunner, M. Grasmann, M. Grohmann, H.-P. Gschnell, P. Hingerl, M. Ihle, I. Inhofer, T. Jäkel, J. Jirsch, W. Karing, M. Keil, L. Kestler, V. Kliem, T. Kürzinger, E. Kuhwald, L. Mayer, A. Nagy, A. Neun, J. Paschou, M. Peischl, C. Preisler, A. Reither, R. Rochner, E. Rossa, P. Sandtner, B. Scheiner, S. Schwaiger, R. Steinle, R. Strecker, L. Thiess, J. Vogt.

1.2 Gäste

Im Jahr 2012 besuchten 72 Gastwissenschaftler das MPE, mit Besuchszeiten von einigen Tagen bis zu einigen Monaten.

2 Preise, Auszeichnungen, Berufungen

Genzel, Reinhard: Crafoord Prize in Astronomy, Royal Swedish Academy of Sciences, Stockholm, Schweden, Mai 2012

Genzel, Reinhard: Tycho Brahe Prize, European Astronomical Society (EAS), Schweiz, Juli 2012

Karska, Agata: "For Women in Science"-Förderpreis, Berlin, Deutschland, Juni 2012

Schady, Patricia: Sofja Kovalevskaja-Preis, Deutschland, August 2012

Tacconi, Linda: Lancelot M. Berkeley Prize / American Astronomical Society, USA, Januar 2012

Thoma, Markus: Universität Giessen, Ruf auf W3-Professur für Plasma- und Raumfahrtphysik, Giessen, Deutschland, Dezember 2012

Trümper, Joachim: "Order of the Rising Sun"-Preis, Japanische Regierung, Berlin, Deutschland, Juli 2012

van Dishoeck, Ewine: Akademie-Preis der königlich niederländischen Akademie der Wissenschaften, Niederlande, Juni 2012

van Dishoeck, E.: Greenstein Lecture, California Institute of Technology, Pasadena, USA, April 2012

3 Lehrtätigkeit

Becker, W.: Astrophysikalisches Doktorandenseminar mit den Studenten der *International Max-Planck Research School on Astrophysics*, LMU München; *Advances in Astronomy*, LMU München WS 11/12, SS 12, WS 12/13

Bender, R.: Astrophysikalisches Grundpraktikum, LMU München WS 12/13; Astronomisches Kolloquium, LMU München WS 11/12, SS 12, WS 12/13; Astrophysikalisches Hauptseminar II theoretisch und numerisch orientiert: "Tools in modern Astrophysics", LMU München SS 12, WS 12/13; Begleitendes Kolloquium zum Astrophysikalisches Hauptseminar II theoretisch und numerisch orientiert, LMU München SS 12, WS 12/13; Grundlagen

der fortgeschrittenen Astrophysik (Essentials of Advanced Astrophysics), LMU München WS 11/12 (mit Saglia); Ergänzung zur Vorlesung P1.1 "Grundlagen der fortgeschrittenen Astrophysik", LMU München WS 11/12, SS 12; Forschungsprojekt Masterarbeit, Anleitung zum wissenschaftlichen Arbeiten, LMU München SS 12, WS 12/13; Vorlesung "Galaxien", LMU München WS 12/13; Projektseminar mit begleitendem Kolloquium "Extragalactic group seminar", LMU München SS 12; Projektseminar mit begleitendem Kolloquium "Gravitational lensing", LMU München SS 12, WS 12/13; Projektseminar mit begleitendem Kolloquium "Galaxies", LMU München SS 12; Projektseminar mit begleitendem Kolloquium aus dem Bereich experimenteller Arbeiten und Instrumentenentwicklung in der Astronomie, LMU München SS 12, WS 12/13; Projektseminar mit begleitendem Kolloquium, vorbereitendes Kolloquium zur Masterarbeit mit Tutorium, Kolloquium und Tutorium aus dem Bereich experimenteller Arbeiten, Anleitung zum wissenschaftlichen Arbeiten, LMU München SS 12, WS 12/13; Projektseminar mit begleitendem Kolloquium, vorbereitendes Kolloquium zur Masterarbeit mit Tutorium, Kolloquium und Tutorium aus dem Bereich der Kosmologie, Anleitung zum Wissenschaftlichen Arbeiten, LMU München SS 12, WS 12/13

Boller, Th.: Physik Aktiver Galaxien, J.-W. von Goethe Univ. Frankfurt WS 11/12; Λ CDM Cosmology, Dark Matter and Dark Energy, J.-W. von Goethe Univ. Frankfurt WS 11/12; Radiation and Matter, J.-W. von Goethe Univ. Frankfurt SS 12; IMPRS Advanced Course: AGN Physics, MPE Garching, WS 12/13

Diehl, R.: Seminar on "Nuclei in the Cosmos", TU München WS 11/12 (mit Professoren der TUM, LMU und MPA)

Eisenhauer, F.: Einführung in die Astrophysik, TU München WS 11/12, WS 12/13

Gerhards, O.: IMPRS Advanced Course: Galactic Dynamics and Evolution of Galaxies, MPE Garching, WS 11/12

Gillessen, S.: Astrophysical Seminar, LMU München WS 11/12, SS 12, WS 12/13

Ivlev, A.: Transport and Dynamics in Complex Fluids, Heinrich-Heine-Universität Düsseldorf SS 12

Kanbach, G.: "Imaging & Data", course in the PRTL5 Dublin Graduate Physics programme, June 11-15, 2012, Lectures on High Energy Astrophysics, University College Dublin SS 12; Schule für Astroteilchenphysik, Helmholtz-Allianz für Astroteilchenphysik, 4.-6.10.2012, Obertrubbach, Gammastrahlen-Satelliten-Astronomie (Gamma-Ray Astronomy from Satellites), Erlangen Center for Astroparticle Physics WS 12/13

Merloni, A.: IMPRS Advanced Course: Astrophysical Black Holes, MPE Garching, WS 11/12; Formation And Cosmic Evolution Of Massive Black Holes, Sigrav Graduate School In Contemporary Relativity And Gravitational Physics WS 11/12

Müller, T.: Überblick über das Sonnensystem, Astrophysikalische Lehrerfortbildung SS 11

Raeth, C.: Complex Systems and Fundamentals of Nonlinear Data Analysis, LMU München WS 12/13

Saglia, R.: Grundlagen der fortgeschrittenen Astrophysik (Essentials of Advanced Astrophysics), LMU München WS 11/12 (mit R. Bender)

Thoma, M.: Theoretische Plasmaphysik, Univ. Gießen SS 12; Physik in der Schwerelosigkeit, Univ. Gießen WS 12/13; Fortgeschrittenenpraktikum III und IV - Versuch 03: Plasmakristall, TU München WS 11/12, SS 12, WS 12/13 (mit M. Kretschmer und M. Schwabe)

4 Wissenschaftliche Arbeiten

Die wissenschaftlichen Aktivitäten am MPE sind organisatorisch in vier große Arbeitsbereiche aufgeteilt, die jeweils von einem Direktor geleitet werden: (1) Infrarot- und Submm/mm

Astronomie, (2) Optische und Interpretative Astronomie, (3) Hochenergieastrophysik und (4) Theorie und komplexe Plasmen. Diese vier Arbeitsbereiche, sowie noch zusätzlich zwei unabhängige Forschungsgruppen, beschäftigen sich – oft bereichsübergreifend – mit unseren sechs großen Forschungsthemen (siehe “Allgemeines“). Unsere Wissenschaft ist ausführlich auf unseren Internetseiten (<http://www.mpe.mpg.de>) unter dem Punkt “Forschung“ dargestellt. Wichtige Einzelergebnisse sind unter “Neuigkeiten aus der Forschung“ in zeitlicher Reihenfolge beschrieben.

5 Diplomarbeiten, Dissertationen, Habilitationen

5.1 Bachelor-, Master-, Diplomarbeiten

Kim, A.: Optimierung einer Variable Conductance Heatpipe (VCHP) für das eROSITA Teleskop (Bachelor-Arbeit). Technische Universität München 2012.

Kodric, M.: Cepheids in the Pan-STARRS 1 survey of M 31 (PAndromeda) (Master-Arbeit). Ludwig-Maximilians-Universität München 2012.

Kretschmann, S.: The search for planets around white dwarfs, variables and eclipsing binaries in the Pan-Planets fields (Master-Arbeit). Ludwig-Maximilians-Universität München 2012.

Lippa, M.: The Metrology System of the VLTI Instrument GRAVITY (Master-Arbeit). Ludwig-Maximilians-Universität München 2012.

Obermeier, C.: The search for extrasolar planets with Pan-Planets (Master-Arbeit). Ludwig-Maximilians-Universität München 2012.

Plewa, P.M.: Stabilität klumpiger AGN Tori (Bachelor-Arbeit). Ludwig-Maximilians-Universität München 2012.

Schachtner, B.: Mass determination of supermassive black holes in centers of galaxies (Bachelor-Arbeit). Ludwig-Maximilians-Universität München 2012.

Schlee, S.A.S.: Calibration of a novel, non-linear DePFET pixel in a prototype sensor setup for the European XFEL (Diplom-Arbeit). Ludwig-Maximilians-Universität München 2012.

Wullstein, P.W.: Window Function of the Hobby-Eberly Telescope Dark Energy Experiment (Master-Arbeit). Ludwig-Maximilians-Universität München 2012.

5.2 Dissertationen

Buschkamp, P.: The LUCIFER multi-object spectroscopy unit and line excitation, metallicity, and dust extinction in massive star-forming galaxies at high redshift. Ludwig-Maximilians-Universität München 2012.

Connelly, J.L.: Optically and X-ray selected galaxy groups at intermediate redshift. Ludwig-Maximilians-Universität München 2012.

Du, C.D.: Nonequilibrium phase transition in binary complex plasmas. Ludwig-Maximilians-Universität München 2012.

Fabricius, M.H.: Kinematics Across Bulge Types A Longslit Kinematic Survey and Dedicated Instrumentation. Ludwig-Maximilians-Universität München 2012.

Fürmetz, M.: Design, development and verification of the eROSITA thermal control system. Technische Universität München 2012.

Granato, S.: The response of silicon PNCCD sensors with aluminum on-chip filter to visible light, UV- and X-ray radiation. Universität Siegen 2012.

Morganti, L.: Made-to-measure particle models of intermediate-luminosity elliptical galaxies: regularization, parameter estimation, and the dark halo of NGC 4494. Ludwig-Maximilians-Universität München 2012.

Pfuhl, O.: The GRAVITY interferometer and the Milky Way's Nuclear Star Cluster. Ludwig-Maximilians-Universität München 2012.

Rusli, S.: Central black holes in massive early-type galaxies. Ludwig-Maximilians-Universität München 2012.

Schmaler, G.: Characterisation of PNCCDs and Analysis of Pixel Defects. Technische Universität München 2012.

Sturm, R.: An X-ray investigation of the Small Magellanic Cloud with XMM-Newton. Technische Universität München 2012.

Wörner, L.: Tuning of the Interaction Potential in Complex Plasmas. Ludwig-Maximilians-Universität München, Université d'Orléans, France 2012.

Ziparo, F.: The role of environment and merging activity in the star formation up to z 1.6. Ludwig-Maximilians-Universität München 2012.

5.3 Habilitationen

Krause, M.G.H.: Theory of Galactic Outflows. Ludwig-Maximilians-Universität München 2012.

6 Tagungen, Projekte am Institut und Beobachtungszeiten

6.1 Tagungen und Veranstaltungen

HIPE Forum 2011, Garmisch-Partenkirchen, Germany, 28.-30.6. 2011, Organisation: E. Sturm, E. Wieprecht, J. Riedinger.

Hot Planets and Cool Stars, Garching, MPE, 12.-16.11.2012, Organisation: R.P. Saglia.

Gamma-Ray Bursts 2012, Munich, 7.-11.5.2012, Organisation: J. Greiner, A. Rau.

ESO@50 - the first 50 years of ESO, Garching, Germany, 3.-7.9.2012, Organisation: B. Barbuy, X. Barcons, W. Benz, J. Bergeron, E. Daddi, T. de Zeeuw, E. Emsellem, I. Hook, K. Kuijken, B. Leibundgut, M.T. Ruiz, L. Tacconi, M. Tosi, M. West.

Galactic Scale Star Formation, Heidelberg, Germany, 30.7.-3.8.2012, Organisation: F. Bigiel (co-chair), A. Bolatto, B. Elmegreen, S. Glover (co-chair), L. Hartmann, R. Klessen, M. Krumholz, E. Ostriker, L. Tacconi.

IAU Symposium 292: Molecular Gas, Dust, and Star Formation in Galaxies, Beijing, China, 20.-24.8.2012, Organisation: M. Bureau (co-chair), Y. Fukui (co-chair), K. Brooks, L. Bronfman, D. Calzetti, P. Caselli, F. Combes, F. Boulanger, E. de Blok, Y. Gao, M. Krumholz, J. Ott, L. Tacconi, E. Vazquez-Semadeni, T. Wong.

IAU Symposium 295: The Intriguing Life of Massive Galaxies, Beijing, China, 27.-31.8.2012, Organisation: D. Thomas (co-chair), A. Pasquali (co-chair), I. Ferreras (cochair), R. Davies, A. Dekel, R. Ellis, Y. Jing, X. Kong, S. Mao, E. Peng, A. Renzini, R. Somerville, I. Smail, L. Tacconi, C. Tremonti, X.Z. Zheng.

EWASS 2012 Symposium 1: Molecular Gas in High Redshift Galaxies, Rome, Italy, 2.-3.7.2012, Organisation: C. De Breuck, R. Maiolino (chair), V. Smolčić, L. Tacconi, F. Walter (co-chair).

COSPAR-12-E1.1: "Radio Meets Hard X-rays: Two Skies in Comparison", Mysore, India, 15.-16.7.2012, Organisation: A. Malizia, H. Krimm, A.J. Bird, G. Israel, F. La Franca, A. Marscher, A. Merloni, R. Mushotzky, S.P. Reynolds, G. Romero, J. Sokoloski, P. Ubertini.

eROSITA Consortium Meeting, Hamburg, 23.-24.7.2012, Organisation: J. Robrade, J. Schmitt, P. Predehl, A. Merloni.

Ringberg AGN Workshop, Ringberg Castle, Bavaria, 3.-5.12.2012, Organisation: K. Nandra, S. Faber, D. Kocevski, R. Somerville, M. Salvato, A. Georgakakis, S. Juneau, A. Merloni, A. Koekemoer, M. Brightman.

Large Area Optical Spectroscopic Surveys: Science with 4MOST, AIP, Potsdam, 13.-15.11.2012, Organisation: C. Chiappini, R. De Jong, H. Boehringer, P. Bonifacio, E. Caffau, N. Christlieb, G. Dalton, S. Feltzing, P. Francois, E. Grebel, A. Helmi, M. Irwin, F. Kitaura, A. Koch, A. Korn, H.G. Ludwig, A. Merloni, I. Minchev, O. Schnurr, A. Schwobe, M. Steinmetz, S. Trager, J. Walcher, N.A. Walton.

Gemini North Adaptive Optics Workshop, Victoria, Canada, 19.-21.6.2012, Organisation: D. Andersen, J. Christou, D. Crampton, R. Davies, C. Marois, P. McGregor, S. Oya, C. Packham, H. Roe.

ISM Splinter Meeting at the Meeting of the Astronomical Society, Hamburg, 25.-26.9.2012, Organisation: M. Schartmann, A. Burkert.

ISM-SPP school: The Physics of the ISM, Freising, 1.-5.10.2012, Organisation: M. Schartmann, A. Burkert, K. Fierlinger.

Millimeter, Submillimeter, and Far-Infrared Detectors and Instrumentation for Astronomy VI, Amsterdam, 3.-6.7.2012, Organisation: W. Holland, J. Zmuidzinas, A. Poglitsch, A. Murphy, C. Walker, K. Irwin, J.R. Gao, K. Schuster, G. Stacey.

9th Potsdam Thinkshop 2012 - Galaxy Surveys using Integral Field Spectroscopy: Achievements and Opportunities, Potsdam, Germany, 10.-13.9.2012, Organisation: K. Bundy, S. Croom, E. Emsellem, N.M. Frster Schreiber, G. Kauffmann, G. Hill, A. Moiseev, B. Nichol, M. Roth, J. Walcher.

6.2 Projekte und Kooperationen mit anderen Instituten

Australien

Australian National University: Galaxienentstehung.

Monash University: Nukleare Astrophysik.

Swinburne University of Technology, Victoria: Millisecond Pulsars.

University of Western Sydney: Magellanic Clouds.

Belgien

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

Brasilien

Observatorio Nacional: DES.

Centro Brasileiro de Pesquisas: DES.

Universidade Federal do Rio: DES.

Universidade de Sao Paulo: Galaxienentstehung.

Chile

Universidad de Concepcion: Röntgen-Doppelsternsysteme.

Universidad Catolica Santiago: Röntgen-Doppelsternsysteme.

China

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

Institute for Plasma Physics, Hefei: Komplexe Plasmen, Staubdetektion in Fusionsreaktoren.

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

Deutschland

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

Christian-Albrechts-Universität, Kiel: Komplexe Plasmen.

Dept. Earth and Environmental Sciences of LMU Munich: Raman Spectroscopy.

Dept. of Neuropathology, TU Munich: Raman Spectroscopy; Plasma Medicine.

DLR-Köln Porz: Plasmakristall Experiment; PK-3 Plus; Plasma-Dekonamination.

European Southern Observatory (ESO), Garching: KMOS Multiobjekt-Spectrograph für VLT; GRAVITY; Galaxienentstehung; ASTRO-WISE; OmegaCAM; MICADO; Nukleare Astrophysik; ERIS.

Fraunhofer Institut für Festkörpertechnologie, München: ATHENA; eROSITA.

Fraunhofer Institut für Mikroelektronische Schaltungen und Systeme, Duisburg: Mikroelektronikentwicklungen; CAMEX 64B; JFET-CMOS Prozessor; ATHENA; eROSITA.

Institut für Astrophysik Göttingen: MICADO.

Institute of Experimental Oncology, TU Munich: Plasma Medicine.

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

Institut für Astronomie und Astrophysik Tübingen (IAAT): XMM-Newton; eROSITA.

Klinik für Dermatologie, Allergologie und Umweltmedizin, Krankenhaus München Schwabing: Plasmamedizin.

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

Laser Zentrum Hannover: Development of advanced Filters for MICADO.

Leibniz Rechenzentrum der Bayerischen Akademie der Wissenschaften, Garching: Label free imaging and Pattern Recognition.

Ludwig-Maximilians-Universität, München: KMOS; MICADO; HETDEX; Plasmamedizin.

Maier-Leibnitz Laboratorium, Garching: eROSITA.

Max-Planck-Institut für Astronomie, Heidelberg: GRAVITY; LUCI; Herschel-PACS; Pan-STARRS; SDSS; ARGOS; MICADO; EUCLID.

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

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

Max-Planck-Institut für Kernphysik, Heidelberg: CFEL.

Max-Planck-Institut für Biomedizinische Forschung, Heidelberg: CFEL.

Max-Planck-Institut für Komplexe System, Fritz-Haber Institut, Dresden: CFEL.

Max-Planck-Institut für Biophysikalische Chemie, Göttingen: CFEL.

Max-Planck-Institut für Radioastronomie, Bonn: ARGOS.

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

Städtisches Klinikum München GmbH, Mikrobiologie Zentrallager Schwabing: Plasmamedizin.

Stiftung Tierärztliche Hochschule, Institut für Lebensmittelqualität und -sicherheit, Hannover: Plasmamedizin.

Thüringer Landessternwarte Tautenberg: GROND; Gamma-Ray Bursts.

Technische Universität Berlin: Interstellares Medium.

Technische Universität Darmstadt: CAST.

Technische Universität München: Plasmamedizin; Nukleare Astrophysik.

Trans MIT, Gießen: Pulse tube cooler for GRAVITY.

Universität Bochum: Komplexe Plasmen; LUCI.

Universität Bonn: Test von Pixeldetektoren für ATHENA; OmegaCAM; ASTRO-WISE; eROSITA, EUCLID.

Universität Düsseldorf: Komplexe Plasmen; ERC Advanced Grant.

Universität Erlangen: eROSITA.

Universität Greifswald: Komplexe Plasmen.

Universität Hamburg: eROSITA; OPTIMA (Flarestars).

Universität Heidelberg: ATHENA; XFEL.

Universität Jena: Isolierte Neutronensterne; Nukleare Astrophysik.

Universität Kiel: Komplexe Plasmen.

Universität Köln: Galaktisches Zentrum; GRAVITY.

Universität Mannheim: ATHENA; XFEL.

Universität Regensburg, Department für Dermatology, Uni.-Klinik Regensburg: Plasmamedizin.

Universität Siegen: Compton Kamera.

University of Veterinary Medicine Hannover, Institute for food quality and food safety: Plasma Medicine.

Universität Würzburg: AGADE; GRIPS.

Frankreich

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

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

GREMI-Lab, Orleans: Komplexe Plasmen; Plasmakristall Experiment auf der ISS.

IAP Paris: Nukleare Astrophysik.

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

IPAG Grenoble: GRAVITY.

OAMP Marseille: Herschel-PACS.

Observatoire de Paris-Meudon: ASTRO-WISE; GRAVITY; MICADO.

Griechenland

University of Crete and Foundation for Research and Technology Hellas (FORTH), Heraklion: Ausbau und Betrieb der Skinakas Sternwarte; Untersuchung von windakkretierenden Röntgendoppelsternsystemen; Entwicklung und Einsatz des OPTIMA Photometers; optische Identifikation und Monitoring von Röntgen-AGN; Novae.

Großbritannien

Belfast Queen's University: PanSTARRS.
 BRUNEL University: ATHENA.
 John Moores University, Liverpool: Himmelsdurchmusterung Galaxienhaufen.
 Loughborough University, Department of Electronic and Electrical Engineering: Plasma-medizin.
 Open University, Milton Keynes: Kataklysmische Veränderliche; Novae.
 Rutherford Appleton Laboratory, Council for the Central Laboratory of the Research Councils: SIS-Junctions; Komplexe Plasmen.
 University of Cambridge: DES; RoPacs.
 University College London, MSSL: High Energy Pulsars; EUCLID; DES.
 University of Durham: KMOS; PanSTARRS.
 University of Cambridge: DES; RoPACS.
 University of Edinburgh: DES; KMOS; PanSTARRS.
 University of Hertfordshire: RoPACS.
 University of Leeds: Komplexe Plasmen.
 University of Leicester: XMM-Newton Datenanalyse; ATHENA; Swift.
 University of Liverpool: Komplexe Plasmen.
 University of Nottingham: DES.
 University of Portsmouth: DES.
 University of Sussex: DES.
 University of Southampton: Magellanic Clouds.
 University Oxford: Komplexe Plasmen; KMOS.
 United Kingdom Astronomy Technology Centre (UKATC): EUCLID; KMOS.

Irland
 National University of Ireland, Galway: High Time Resolution Astronomy.
 University College Dublin, Dublin: Fermi/GBM.

Israel
 School of Physics and Astronomy, Wise Observatory, Tel Aviv: Aktive Galaxien; Galaxienentwicklung; Interstellares Medium.
 Weizmann Institut, Rehovot: Komplexe Plasmen; Galaktisches Zentrum.

Italien
 Brera Astronomical Observatory: Himmelsdurchmusterung Galaxienhaufen; ATHENA.
 IFCAI-CNR Palermo: XMM-Newton Beobachtungen von Neutronensternen und Pulsaren.
 INAF Arcetri: ARGOS; LBT.
 INAF Padua: Herschel-PACS; OmegaCam; MICADO; LBT.
 INAF Roma: 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.

Universität Neapel: Komplexe Plasmen.

Japan

ISAS: SPICA-SAFARI.

JAXA: PK-3 Plus; PK-4; Plasmalab.

Kyoto Institute for Technology: Komplexe Plasmen, PK-3 Plus; Plasmalab.

Tohoku University: Komplexe Plasmen.

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

University of Osaka: Astro H; ATHENA CCDs.

University of Tokyo: GeBiB Detektoren.

Yokohama National University: Komplexe Plasmen.

Kroatien

Ministry of Science and Technology, Zagreb: CAST.

Niederlande

ESTEC, Noordwijk: XMM-Newton-TS-Spiegelkalibration; CCD Entwicklung; Radiation Performance Instrument; INTEGRAL; EUCLID; PK-4.

FOM Institute for Plasma Physics, Rijhuizen: Komplexe Plasmen.

NOVA Leiden: MICADO.

SRON Groningen: SPICA-SAFARI.

SRON, Utrecht: Chandra-LETG; TES für SPICA/ATHENA.

TU Delft: Reflexions-Messungen an schwarzen Farben.

University Eindhoven: Komplexe Plasmen; PlasmaLab.

University of Groningen, Kapteyn Institute: Rekonstruktion der Dichteverteilung im Universum.

Norwegen

Universität Trømsø: Komplexe Plasmen.

Österreich

Universität und TU Wien: Herschel-PACS, MICADO.

Universität Innsbruck: MICADO.

Universität Linz: MICADO.

Polen

Nicolaus Copernicus (ZAMK), Torun: Pulsars Astronomical Centers.

University Zielona Gora: OPTIMA.

Portugal

SIM Lissabon: GRAVITY.

Universität Lissabon: Komplexe Plasmen.

Russland

Joint Institute for High Temperatures (JFHT) of the Russian Academy of Science, Moscow: Plasmakristall Experiment (PKE); PKE-Nefedov; PK-3 Plus; PK-4; Plasmalab; Plasma-medizin.

Institute for Biomedical Problems of the Russian Academy of Sciences, Moscow: Plasma Medicine.

Institute for Epidemiology and Microbiology Problems of the Russian Academy of Medical Sciences, Moscow: Plasma Medicine.

Institute for Theoretical and Experimental Biophysics of the Russian Academy of Sciences, Moscow: Plasma Medicine.

Institute for Problems of Chemical Physics of the Russian Academy of Sciences, Moscow: Plasma Medicine.

Institute for Physical Chemical Medicine of the Russian Academy of Medical Sciences, Moscow: Plasma Medicine.

Space Research Institute (IKI) of the Russian Academy of Science, Moscow: eROSITA.

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

Schweden

University Lund/Observatory: OPTIMA.

University Stockholm: Komplexe Plasmen; Staubdetektion in Fusionsreaktoren.

Schweiz

CERN, Geneva: CAST.

ETH Zürich: ERIS.

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

Universität Basel: Nukleare Astrophysik.

Spanien

Centro de Investigaciones Energeticas, Medioambientales y Tecnologicas: DES.

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

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

Instituto de Ciencias del Espacio: DES.

Institut de Fisica d'Altes Energies: DES.

LAEFF, Madrid: RoPACS.

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

Universidad de Zaragoza: CAST.

Observatorio Astronomico de Mallorca: Novae; Kometen.

Taiwan

National Central University, Chungli: PanSTARRS.

Türkei

Bogazici University, Istanbul: CAST.

Ukraine

Main National Observatory, Kiev: RoPACS.

Ungarn

Konkoly Observatory: Herschel-PACS.

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.

Institute for Astronomy, Hawaii, Honolulu: Galaxienentstehung; PanSTARRS; NIR Kamera für Wendelstein.

Jet Propulsion Laboratory, Pasadena: EUCLID.

Johns Hopkins University: PanSTARRS.

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

MIT, Cambridge: ATHENA WFI.

NOAO, Tucson: DES.

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

Naval Research Laboratory: Komplexe Plasmen.

Ohio State University, Columbus: DES; LBT.

Old Dominion University Norfolk, Laser & Plasma engineering Institute: Plasma Medicine.

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

Pennsylvania State University: HETDEX; ATHENA WFI; Swift.

Research Corporation: LBT.

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

Space Telescope Science Institute, Baltimore: Galaxienentstehung.

STC: EUCLID.

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

Stanford/SLAC: CAMP, DES.

Texas A & M University, College Station: DES.

Texas State University, San Marcos: HETDEX.

University of Arizona, Tucson: Kosmische Strahlung; SOHO/CELIAS; Planetenentstehung; LBT; ARGOS.

University of California, Berkeley: MPG/UCB-Kollaboration; Fern-Infrarot-Detektoren; Department of chemical engineering; Komplexe Plasmen; Plasmamedizin.

University of California, San Diego: Komplexe Plasmen.

University of California, Santa Cruz: DES.

University of Chicago: DES.

University of Colorado, Boulder: Komplexe Plasmen.

University of Iowa, Iowa City: Komplexe Plasmen; PKE-Nefedov; PK-3 Plus.

University of Illinois at Urbana-Champaign: FIFI-LS; DES.

University of Michigan: DES.

University of Pennsylvania: DES.

University of Pittsburgh: Galaxienentstehung.

University of Texas, Austin: Galaxienentstehung; HETDEX.

University of Toledo: Galaxienentstehung.

6.3 Multinationale Projekte

ARGOS – Laserleitstern für das LBT: API, 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 – International X-ray Observatory: University of Leicester, UK; SRON Utrecht, The Netherlands; Institut für Astronomie und Astrophysik Tübingen, Germany; CESR Toulouse, France; Institute of Space and Astronautical Science (ISAS), Japan.

BOSS – Baryon Oscillation Spectroscopic Survey: SDSS-III Collaboration.

CAST – CERN Solar Axion Telescope: CERN Geneva Switzerland; TU Darmstadt, MPI für Physik (WHI) 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, Astrophysikalisches Institut Potsdam, 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 X-ray Observatory: 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 – Cosmic Evolution Survey: INAF-Osservatorio Astronomico di Bologna, INAF-Osservatorio Astronomico di Roma, INAF-Osservatorio Astrofisico di Arcetri, INAF/IASF-CNR, Sezione di Milano, IRA-INAf, Bologna, Dipartimento di Astronomia, Università Padova, Dipartimento di Fisica, Università degli Studi Roma Tre, Italy; Harvard-Smithsonian Centre for Astrophysics, Cambridge, Department of Physics, Carnegie Mellon University, Pittsburgh, Institute for Astronomy, University of Hawaii, California Institute of Technology, Pasadena, Department of Astronomy, Yale University, USA; INTEGRAL Science Data Centre, Versoix, Switzerland; Laboratoire d’Astrophysique de Marseille, France.

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

eROSITA – extended ROentgen Survey with an Imaging Telescope Array: Universität Tübingen, AIP Potsdam, Universität Hamburg, Remeis-Sternwarte Bamberg, MPA Garching, 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.

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

Fermi/LAT – Fermi Large Area 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: Observatoire de Paris /LESIA, France; MPIA Heidelberg, Universität zu Köln, Germany; European Southern Observatory, Garching, Germany.

GROND – Gamma-Ray Burst Optical Near-IR Detector: Landessternwarte Tautenburg, Germany; ESO Garching, Germany.

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.

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 Scientist: 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 die Astrofisica Spatiale Frascati, Italy; N. Copernikus 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.

KMOS – A VLT multi-IFU near-infrared spectrograph: Universitätssternwarte München, Germany; University of Durham, ATC Edinburgh, University of Oxford, Bristol University, UK.

LBT – Large Binocular Telescope Project: MPIA Heidelberg, MPIfR Bonn, Landessternwarte Heidelberg Königstuhl, Astrophysikalisches Institut Potsdam, Germany; University of Arizona Tucson, Ohio State University, Columbus, Research Corporation USA; Osservatorio Astrofisico di Arcetri Firenze, 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 – MCAO Imaging Camera for Deep Observations: LMU, USM, MPIA, Germany; INAF Padova, Italy; NOVA, Federation of Dutch University Astronomy Departments, The Netherlands; LESIA Paris, France.

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

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

PanSTARRS: MPIA Heidelberg, Germany; University of Hawaii, Harvard University, Johns Hopkins Univ. Baltimore, MD, USA; Universities of Durham, Edinburgh, Belfast, UK.

PK-3 Plus (Plasma-crystal experiment): JIHT Moscow, Russia; University of Iowa City, USA; DLR-Köln, Germany; Université d'Orléans CNRS, France; Okayama University, JAXA-ISAS, Kyoto Institute of Technology, Japan.

PK-4 (Plasma-crystal experiment): JIHT Moscow, Russia; Université d'Orléans CNRS, France; University Stockholm, Schweden, University Napoli, Italy; University Tromsø, Norway; University Liverpool, UK; University Iowa, University Auburn, USA; ESTEC Noordwijk, The Netherlands; DLR Bonn, Germany.

PlasmaLab: JIHT Moscow, Russia; GREMI-Orleans, France; Tohoku University Sendai, Japan.

Plasmamedizin: Max Planck Innovation GmbH, Dept. of Dermatology, Hospital Schwabing, München, Medizet Dept. Microbiology, Schwabing, München, Dept. of Dermatology, University Hospital Regensburg, Dept. of Neuropathology, TU München, Institute of Experimental Oncology, TU München, University of Veterinary Medicine, Hannover, Dept. Infectiology & Virology, University Heidelberg, Section Crystallography, LMU München, German Aerospace Center (DLR), Cologne, German Aerospace Center (DLR), Bonn, Dept. of Toxicology, TU München, Hospital for ENT, LMU München, Germany; Joint Institute for High Temperatures of RAS, Institute for Biomedical Problems, RAS, Institute for Epidemiology and Microbiology, RAMS, Institute for Theoretical and Experimental Biophysics, RAS, Shemyakin and Ovchinnikov Institute of Bioorganic Chemistry, Institute for Physical Chemical Medicine, RAMS, “International Legal Aid“ Company, Russia; University of California, Berkeley, Old Dominion University, Norfolk, VA, USA; Loughborough University, Leicestershire, ADTEC Europe Ltd., UK.

RoPACS – Marie Curie Initial Training Network to study Rocky Planets around Cool Stars: University of Hertfordshire, Institute of Astronomy, Cambridge, UK; Institute de Astrofísica de Canarias, Laboratono de Astrofísica Espacuval y Física Fundamental, Madrid, Spain; Main Astronomical Observatory, Kiev, Ukraine.

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

SPICA-SAFARI: University of Tokyo, ISA/JAXA, Sagamihara, Nagoya University, Japan; SRON, Groningen, TU Delft, The Netherlands; RAL, Dittcot, University of Cardiff, Cambridge University, UK; University of Geneva, ETH Zürich, Switzerland; CEA Grenoble, CESR Toulouse, Sap-CEA Saclay, LAM, Marseille, France; University of Vienna, Austria; MPIA, Heidelberg, PTB, Berlin, Germany; CAB-INTA, Madrid, Spain; IFSI-INAF, Rome, Italy; KU Leuven, Belgium; University of Lethbridge, Canada; NUI Maynooth, Ireland.

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.

Topical Team – Critical Point in Complex Plasmas: ESA, Paris, France; JAXA, Tokyo, Japan; JIHT, Moscow, Russia.

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

XMM-Newton/EPIC: 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.

6.4 Projekte mit der Industrie

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

ABN GmbH, Neuried: Betreuung der Testanlage PANTER.

ADTEC Plasma Technology Co. Ltd., Hiroshima: Entwicklung eines Niedertemperatur-Plasma-Gerätes zur in-vivo Sterilisation für Medizinanwendungen.

Albedo GmbH, München: Soft- and Hardware Entwicklung für PK-3 Plus; Elektronik für SDD-Auslese.

Array Electronics, Engmanting: DAQ development OPTIMA.

BASF Coatings AG, Münster: Untersuchung der Streueigenschaften von Mikropartikeln.

Bonerz engineering, Weiler-Simmerberg: Platinenentwicklung, Elektronikentwicklung.

Buchberger GmbH, Tuchenbach: Fertigung Strukturteile für PANTER-Manipulatoren und OPTIMA; Strukturteile CAST und GROND; Lucifer.

Carl Zeiss, Jena: eROSITA Spiegel und Mandrels.

Cryovac, Troisdorf: Cryogenic Design for GRAVITY.

EADS Atrium Munich: Euclid design study.

ESS, Landsberg: Wartung der Elektroinstallation; Ergänzung der Ansteuerungseinheit für das Vakuumpumpensystem; Fertigung von elektrischen Ansteuerungen für die Testanlagen PANTER, CALIFA und PUMA.

ESL GmbH, Berlin: Fertigung von Leiterplatten.

Euro Hect Pipes, Nivelles, Belgien: Cooling System for eROSITA.

Freyer GmbH, Tuningen: PANTER; parts for LUCI.

Guido Lex Werkzeugbau GmbH, Miesbach: Strukturteile für LUCI.

Hans Englett OHG, Berlin: Fertigung von Frontplatten und Meßvorrichtungen.

HPS München: Umgebungs-Tests eROSITA.

Ingenieurbüro Buttler, Essen: Front-End Elektronikentwicklung für ATHENA und eROSITA.

Ingenieurbüro pfma, Haar-Salmdorf: SAFARI.

Ingenieurbüro Weisz, München: Design und Konstruktion für LUCI; PACS Testoptik; SAFARI.

Invent GmbH, Braunschweig: CFRP-Telescopestructure for eROSITA.

Kaiser Optical Systems Inc., Ann Arbor, USA: VIRUS-W VPH grating.

Kayser-Threde GmbH, München: Plasmakristall-Experiment auf der Internationalen Raumstation; PKE; PK-3 Plus; PK-4; eROSITA-Spiegelsystem; EUCLID Design-Studie.

Kugler GmbH, Salem: Spiegel für OPTIMA, FIFI-LS.

Laserjob GmbH, Grafrath: Entwicklung Röntgenbaffle für eROSITA.
 Media Latio Technologies, Borisio Parini, Italy: eROSITA mirror system.
 Oxford Instruments, UK: Sub-Kelvin Kühler für SPCA-Safari.
 PNSensor, München: Entwicklung und Fertigung von Halbleiterdetektoren; Montage von Halbleiterdetektorsystemen; ARGOS.
 RUAG Austria: Teleskop-Deckel-Mechanismus für eROSITA.
 Scientific Instruments, Tucson, USA: Construction of the 16x16K CCD Mosaic Detector of the Wendelstein Wide Field Camera.
 Technotron, Lindau: Entwicklung und Fertigung der Platinen Layouts für eROSITA.
 von Hoerner & Sulger, Schwetzingen: Manufacturing for PK-4.

7 Veröffentlichungen

7.1 In Zeitschriften und Büchern

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7.4 Bücher

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7.5 Populärwissenschaftliche und sonstige Veröffentlichungen

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7.6 Vorträge, Astronomische Telegramme und Zirkulare, Poster

Von Mitarbeitern des MPE wurden im Jahre 2012 insgesamt 373 Vorträge auf Konferenzen, bei Seminaren und Kolloquien und in der Öffentlichkeitsarbeit im In- und Ausland gehalten. Zusätzlich haben sie an insgesamt 143 astronomischen Telegrammen und Zirkularen mitgewirkt und 54 Poster als Erstautoren auf Konferenzen präsentiert. Die Zahlen, verteilt auf die einzelnen Arbeitsbereiche, sind in Tabelle 1 gelistet. Die Zahlen in Klammern geben die eingeladenen Vorträge (bei Konferenzen und zu Kolloquien) an, sowie die Zahl der Erstautorschaften bei Telegrammen und Zirkularen.

Die vollständige Liste der Vorträge, der astronomischen Telegramme und Zirkulare sowie der Poster kann auf der MPE Internetseite (<http://www.mpe.mpg.de>) unter dem Punkt "Forschung/Veröffentlichungen" eingesehen werden.

Tabelle 1: Vorträge, Telegramme/Zirkulare und Poster

Arbeitsgruppe	Vorträge	Telegramme, Zirkulare	Poster
Infrarot-/Submillimeter-Astronomie	153 (117)	9 (3)	5
Optische & Interpretative Astronomie	42 (29)	5 (0)	1
Hochenergieastrophysik	107 (63)	129 (81)	27
Theorie / Komplexe Plasmen	63 (20)	0 (0)	19
Unabhängige Forschungsgruppen	8 (4)	0 (0)	2

8 Öffentlichkeitsarbeit

Das MPE engagiert sich auch in der Öffentlichkeitsarbeit. Im Jahre 2012 hielten MPE-Wissenschaftler 26 öffentliche Vorträge (z.B. an Schulen, Planetarien, bei Astronomischen Vereinigungen). Bei 30 Institutsführungen gewannen Gruppen, hauptsächlich Schulklassen von naturwissenschaftlich orientierten Schulen, einen Einblick in das Institut und seine Wissenschaft. Am "Girls' Day" informierten sich 50 Mädchen über das MPE, 13 Schüler/innen erhielten in ein- oder zweiwöchigen Praktika und 6 Hochschüler in mehrwöchigen Praktika einen Einblick in die Arbeitswelt von Astro- und Plasmaphysikern.

Weitere Informationen zur Öffentlichkeitsarbeit sind auf den MPE Webseiten zu finden (<http://www.mpe.mpg.de/>).

Ralf Bender