

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 fünf 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* und (v) *Komplexe 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/Sub-millimeter-, Infrarot-, Optischen-, Röntgen- und Gammapektralbereichen gemessen. Der hierbei überdeckte Teil des elektromagnetischen Spektrums umfasst mehr als zwölf Dekaden. Die untersuchten Objekte reichen von Kometen bis zu den fernsten Quasaren, von den winzigen Neutronensternen bis zu Galaxienhaufen, den größten bekannten Formationen im Kosmos. Seit der Entdeckung eines neuen Plasmazustandes (“Plasmakristall”) hat sich noch 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 Gruppen-übergreifend an der Interpretation der Beobachtungen und Messungen. Die direkte Wechselwirkung von Beobachtern, Experimentatoren und Theoretikern im Hause ist ein Markenzeichen unseres Arbeitsstils und führt oft im direkten Wechselspiel von Hypothesen und neuen Beobachtungen zu einer frühen Erkennung vielversprechender neuer Forschungsrichtungen.

Zwei technologische Einrichtungen des MPE sind von besonderer Bedeutung: Die 130 m lange Vakuumanlage *Panter* 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 Strahlungsdetektoren, die erfolgreiche Verwendung mathematischer Methoden der nichtlinearen Dynamik in der Medizin, sowie die Anwendungen der Plasmaphysik auf die Medizin. Im Rahmen dieser Transfer-Aktivitäten hält das MPE derzeit 40 Patente.

Neben der Forschung nimmt unser Institut auch universitäre Ausbildungsaufgaben wahr. MPE-Wissenschaftler sind als Hochschullehrer an mehreren Universitäten tätig und betreuen studentische Forschungsprojekte (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 unseren und angrenzenden Forschungsgebieten, häufig in Zusammenarbeit mit Universitätsinstituten. Unsere sehr erfolgreiche "International Max-Planck Research School on Astrophysics" an der Ludwig-Maximilians-Universität (LMU) München brachte eine wesentliche Intensivierung der Doktorandenausbildung im 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, die Europäische Südsternwarte, sowie Forschergruppen aus der TU München beteiligt.

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. 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. Breitkopf (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. R. Davies (Oxford University, UK); Prof. Dr. R. Ellis (CALTECH, USA); Dr. N. Gehrels (NASA GSFC, USA); Prof. Dr. F. Harrison (CALTECH, USA); Prof. Dr. O. Havnes (Trømsø University, Norwegen); Prof. Dr. P. Léna (Université Paris VII, Frankreich); Prof. Dr. R. McCray (University of Colorado, USA); Prof. Dr. M. Salvati (Osservatorio Astrofisico di Arcetri, Italien).

Sonderfachbeirat (CIPS):

Prof. Dr. H. Gleiter (Forschungszentrum Karlsruhe, Deutschland); Prof. Dr. R. Sauerbrey (Forschungszentrum Rossendorf, Dresden, Deutschland).

*Wissenschaftliche Mitarbeiter und Angestellte**A. Infrarot- und Sub-mm-Astronomie*

A. Agudo Berbel, Dr. S. Berta, 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, H. Gemperlein, Dr. S. Gillessen, Dr. J. Grácia Carpio, A. Gräter, Dr. S. Hailey-Dunsheath, S. Harai-Ströbl, Dr. G. Herczeg, Dr. R. Hofmann, Dr. S. Kanneganti, Dr. R. Katterloher, A. Kleiser, H. Krombach, Dr. J. Kurk, Dr. D. Lutz, Dr. B. Magnelli, Dr. T. Müller, Dr. R. Nordon, 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. S. Wuyts, J. Zanker-Smith.

Doktoranden/Diplomanden/Master/Bachelor:

P. Buschkamp, H. Engel, T. Fritz, S. Genel, A. Karska, C. Kister, M. Lippa, D. Moch, G. Orban di Xivry, O. Pfuhl.

B. Hochenergieastrophysik

Dr. R. Andritschke, Dr. I. Balestra, Prof. Dr. W. Becker, B. Boller, Prof. Dr. T. Boller, Dr. A. Bongiorno, Dr. H. Bräuninger, B. Bribian-Sanchez, Dr. M. Brightman, Dr. H. Brunner, Dr. M. Brusa, Dr. W. Burkert, Dr. V. Burwitz, Dr. W. Collmar, Dr. G. Coppa, Dr. K. Dennerl, Dr. R. Diehl, Dr. D. Dwelly, Dr. J. Elbs, Dipl.-Ing. J. Eder, Dr. R. Fassbender, Dr. R. Filgas, Dr. A. Finoguenov, Dr. S. Foley, W. Frankenhuizen, Dr. M. Freyberg, Dr. P. Friedrich, A. Gaida, A. Georgakakis, Dr. J. Greiner, Dr. F. Guglielmetti, Dr. F. Haberl, A. Hahn, K. Hartmann, Dipl.-Math. G. Hartner, Dr. M. Henze, Dr. A. von Kienlin, Dr. N. Kimmel, J.W. Kim, L. Koceluch, Dr. S. Komossa, Dr. N. Meidinger, Dr. A. Merloni, Dr. M. Mühlberger, Dr. M. Nardini, Dipl.-Phys. E. Pfeffermann, Dr. W. Pietsch, Dr. P. Predehl, Dr. A. Rau, Dr. M. Rovilos, Dr. S. Savaglio, Dr. P. Schady, G. Schaller, Dr. F. Schopper, Dr. A. Stefanescu, Dr. A. Strong, Prof. Dr. L. Strüder, Dr. J. Treis, Dr. W. Voges, M. Vongehr, S. Walther, Dr. A. Winter, Dr. X.-L. Zhang.

Doktoranden/Diplomanden/Master/Bachelor:

A. Bähr, M.G. Bernhardt, J. Buchner, D. Burlon, A. Buron, R. Capelli, P. Chaudhary, S. Granato, J. Elliot, G. Erfanianfar, V. Fedl, R. Filgas, M. Fürmetz, D. Gruber, J. Holland, L.-T. Hsu, C. Jocham, K. Kretschmer, T. Lauf, P. Maggi, M. Mirkazemi, A. Nastasi, F. Olivares, T. Prinz, A. Reichert, G. Schmaler, R. Sturm, V. Sudilovsky, R. Suhada, A. Weissmann, F. Ziparo.

C. Theorie und Komplexe Plasmen

Dr. T. Antonova, Dr. T. Aschenbrenner, Dr. P. Badyopadhyay, Dr. P. Brandt, Dr. W. Bunk, Dr. M. Chaudhuri, Dr. L. Couëdel, Dipl.-Phys. H. Höfner, Dr. L. Hou, Dr. A. Ivlev, Dr. S. Khrapak, Dr. B. Klumov, Dr. C. Knapek, Dr. U. Konopka, Dr. M. Kretschmer, A. Langer, Dr. Y. Li, Dr. S. Mitic, Dr. R. Monetti, Dr. T. Nosenko, Dr. M. Pustylnik, 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, M. Fink, S. Giordini, R. Heidemann P. Huber, J. Jeon, K. Jiang, T. Klämpfl, J. Köritzer, J. List, H. Modest, S. Mihatsch, T. Röcker, G. Rossmanith, A. Semenov, L. Wörner.

D. Optische und Interpretative Astronomie

C. Aswathanarayan, Dr. A. Bode, Prof. Dr. A. Burkert, Dr. C. Dalla Vecchia, Dr. F. De Lorenzi, Dr. C. Dobbs, Dr. N. Drory, Dr. F. Durier, Dr. P. Erwin, Dr. V. Gaibler, Dr. N. Geis, Prof. Dr. O. Gerhard, Dr. F. Grupp, Dr. U. Hopp, Dr. J. Johnson, Dr. V. Junk, C. Ingram, Dr. J. Johnson, Dr. R. Katterloher, Dr. S. Khochfar, Prof. Dr. J. Kormendy, Dr. M. Krause, Dr. O. Lahav, Dr. M. Landriau, Dr. U. Maio, Dr. I. Martinez-Valpuesta, Dr. X. Mazzalay, L. Morganti, Dr. B. Muschiolok, Dr. E. Neistein, Dr. J.-P. Paardekooper, Dr. S. Phleps, L. Powell, Dr. R. Saglia, Dr. K. Saha, Dr. A. Sanchez, Dr. M. Schartmann, Dr. R. Senger, Dr. P. Steele, Dr. J. Thomas, Dr. G. Ventimiglia, Prof. Dr. J. Weller, Dr. M. Williams, Dr. D. Wilman, Dr. X. Wu, Dr. H. Ziaeepour.

Doktoranden/Diplomanden/Master/Bachelor:

B. Agarwal, A. Beck, M. Behrendt, S. Bogner, A. Brucalassi, M. Cappetta, S. Chatzopoulos, J. Connelly, C. Dobbs, M. Fabricius, M. Häuser, R. Kosyra, H. Kotarba, S. Kulkarni, A. Longobardi, K. Markovic, A. Monna, L. Morganti, E. Ntormousi, M. Opitsch, L. Oser, S. Pekruhl, G. Rosotti, S. Rusli, H. Schlagenhaufner, C. Strübig, P. Wulstein, J. Zendejas.

E. Ingenieurbereiche und Werkstätten

a) Elektrotechnik

Dipl.-Ing. S. Albrecht, Dipl.-Ing. (FH) L. Barl, Dipl.-Ing. (FH) W. Bornemann, Dipl.-Ing. (FH) T. Burghardt, H. Cibooglu, M. Deuter, A. Emslander, R. Gressmann, Dipl.-Ing. (FH) T. Hagl, Dipl.-Ing. (FH) O. Hälker, O. Hans, M. Hengsmith, Dipl.-Ing. (FH) S.-C. Herrmann, Dipl.-Ing. (FH) F. Huber, Dipl.-Ing. (FH) S. Kellner, Dipl.-Ing. (FH) W. Kink, 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, V. Yaroshenko, J. Zanker-Smith, Z. Zhang, Dipl.-Ing. (FH) J. Ziegleder.

b) Mechanik

R. Bayer, T. Blasi, J. Brandstetter, A. Brara, B. Budau, S. Czempiel, 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, 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) D. Pietschner, M. Plangger, C. Rohe, R. Sandmair, A. Schneider, P. Schnell, C. Schreib, Dipl.-Ing. J. Schubert, W. Schunn, F. Soller, G. Stadler, P. Straube, R. Strecker, Dipl.-Ing. M. Thiel, Dipl.-Ing. L. Tiedemann.

c) Auszubildende

D. Cziasto, M. Greil, M. Hiefinger, D. Huber, T. Kratschmann, F. Mihé, M. Müller, A. Reinold, S. Senftleben, M. Wachendorf.

F. Zentrale DV-Gruppe

H. Baumgartner, Dipl.-Phys. A. Bohnet, B. Bibian-Sanchez, 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.

G. Öffentlichkeitsarbeit

Dr. W. Collmar, Dr. H. Hämmерle.

H. Publikationsunterstützung

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

I. Bibliothek

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

J. Verwaltung und Allgemeine Dienste

C. Altinger, G. Apold, A. Arturo, M. Bauernfeind, U. Bitzer, M. Blaschek, U. Cziasto, E. Doll, C. Eicher, M. Ertl, S. Goldbrunner, M. Grasemann, M. Grohmann, H.-P. Gschnell, 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, M. Peischl, C. Preisler, A. Reither, R. Rochner, E. Rossa, P. Sandtner, E. Sarsilmaz, B. Scheiner, S. Schwaiger, R. Steinle, R. Strecker, L. Thiess, J. Vogt.

1.2 Gäste

Im Jahr 2011 besuchten 50 Gäste das MPE, mit Besuchszeiten von einigen Tagen bis zu einigen Monaten.

2 Preise, Auszeichnungen, Berufungen

Boller, Th.: Michael und Biserka Baum-Preis für herausragende physikalische Arbeit und Lehrtätigkeit durch den Frankfurter Förderverein für physikalische Grundlagenforschung, Frankfurt, Germany, Mai 2011.

Boller, Th.: Member of the “Academia Europaea“ - The Academy of Europe, Physics and Engineering Section, Oktober 2011.

Genzel, Reinhard: Karl-Schwarzschild-Preis, Astronomische Gesellschaft, Heidelberg, Germany, September 2011.

Genzel, R.: West Lecture, Queens University Belfast, Belfast, Nordirland, UK, Juli 2011.

Kretschmer, M.: Best Poster Award 4th International Symposium on Physical Sciences in Space (ISPS-4), ESA/DLR, Juli 2011.

Lüst, R.: Ehrendoktor, Jacobs Universität Bremen, Germany, September 2011.

Morfill, G.: James-Clerk-Maxwell-Preis, Amerikanische Physikalische Gesellschaft, Salt Lake City, USA, November 2011.

Savaglio, S.: “Made in Calabria“-Auszeichnung, Rome, Italy, Februar 2011.

Schwabe, M.: Promotionspreis, Europäische Physikalische Gesellschaft, Strasbourg, France, Juni 2011.

3 Lehrtätigkeit

Becker, W.: Astrophysikalisches Doktorandenseminar mit den Studenten der *International Max-Planck Research School on Astrophysics*, LMU München

Bender, R.: Astronomisches Hauptseminar zur Astrophysik, LMU München WS 10/11; Astrophysikalisches Praktikum “A“ und Übungen, LMU München WS 10/11; Astrophysikalisches Praktikum “B“ und Übungen, LMU München WS 10/11; Astronomisches Kolloquium, LMU München WS 10/11, SS 11, WS 11/12; Extragalactic Journal Club, LMU München WS 10/11; Extragalactic Group Seminar, LMU München WS 10/11 und WS 11/12; Einführung in die fortgeschrittene Astrophysik II, LMU München SS 11; Ergänzung zur Vorlesung P4.1 “Einführung in die fortgeschrittene Astrophysik II“, LMU München SS 11; Astrophysikalisches Hauptseminar II theoretisch und numerisch orientiert, “Tools in modern astrophysics“, LMU München SS 11 und WS 11/12; “Project Seminar: Galaxies“, Projektseminar aus dem Bereich der Kosmologie, der großeräumigen Strukturen, der Struktur von Galaxien und der Dunklen Materie sowie der Dunklen Energie, der Schwarzen Löcher und der Gravitationslinsen, LMU München SS 11; Grundlagen der fortgeschrittenen Astrophysik, LMU München WS 10/11 (mit Saglia); Ergänzung zur Vorlesung P1.1 “Grundlagen der fortgeschrittenen Astrophysik“, LMU München WS 11/12

Böhringer, H.: Introduction to Cosmology and the Study of Large-Scale Structure, IMPRS Garching WS 10/11 und 11/12

Boller, Th.: Einführung in die Astronomie, J.-W. von Goethe Univ. Frankfurt SS 11; Physik Aktiver Galaxien, J.-W. von Goethe Univ. Frankfurt WS 11/12

Diehl, R.: Seminar on “Nuclei in the Cosmos“, TU München WS 10/11, WS 11/12 (mit Professoren der TUM, LMU und MPA); Observational High-Energy Astrophysics, TU München SS 11

Eisenhauer, F.: Einführung in die Astrophysik, TU München WS 10/11, WS 11/12

Ivlev, A.: Complex Plasmas - Plasma State of soft Matter, Heinrich-Heine-Universität Düsseldorf SS 11

Kanbach, G.: Hochenergie Astrophysik, Universität Würzburg, SS 11

Poglitsch, A.: Star Formation Across the Universe: Instrumentation Techniques - Scientific Background, Summer School Alpbach 2011

Saglia, R.: Grundlagen der fortgeschrittenen Astrophysik, LMU München WS 10/11 (mit R. Bender);

Thoma, M.: Theoretische Plasmaphysik, Univ. Gießen WS 10/11

Thoma, M. (mit Kretschmer, M. und Schwabe, M.): Fortgeschrittenenpraktikum III und IV - Versuch 03: Plasmakristall, TU München WS 10/11, SS 11, WS 11/12

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 Arbeitsbereiche beschäftigen sich – oft bereichsübergreifend – mit unseren fünf großen Forschungsthemen (siehe “Allgemeines“). Unsere Wissenschaft ist ausführlich auf unseren Internetseiten (<http://www.mpe.mpg.de>) unter dem Punkt “Forschungsbereiche“ dargestellt. Wichtige Einzelergebnisse sind unter “Aktuelles Thema“ und “MPE Meilensteine“ in zeitlicher Reihenfolge beschrieben.

5 Akademische Abschlussarbeiten

5.1 Bachelor-, Master-, Diplomarbeiten

Gettkandt, J.: Die Suche nach extrasolaren Planeten mittels Astrometrie (Bachelor-Arbeit). Ludwig-Maximilians-Universität München 2011.

Kister, C.: Design of the metrology laser injection unit of the VLTI instrument GRAVITY (Diplom-Arbeit). Ludwig-Maximilians-Universität München 2011.

Moch, D.: Characterization of the differential aberrations of the VLTI beam train (Diplom-Arbeit). Ludwig-Maximilians-Universität München 2011.

Opitsch, M.: Black holes in galaxies. A look at scaling relations between supermassive black hole mass and host galaxy properties (Master-Arbeit). Ludwig-Maximilians-Universität München 2011.

Zeidler, P.: Messung und Instrumentierung zur Bestimmung der physikalischen Eigenschaften von extrasolaren Planeten (Bachelor-Arbeit). Ludwig-Maximilians-Universität München 2011.

5.2 Dissertationen

Chaudhary, P.: Properties of the integrated spectrum of active galactic nuclei. Ludwig-Maximilians-Universität München 2011.

Genel, S.: The Formation of Dark Matter Halos and High-Redshift Galaxies. Ludwig-Maximilians-Universität München 2011.

Guglielmetti, F.G.: Background-Source separation in astronomical images with Bayesian Probability Theory. Ludwig-Maximilians-Universität München 2010.

Henze, M.: Optical Novae as Supersoft X-ray Sources in the Andromeda Galaxy. Technische Universität München 2011.

Kretschmer, K.A.: High-Resolution Spectroscopy of Astrophysical Gamma-Ray Lines. Technische Universität München 2011.

5.3 Habilitationen

Ivlev, A.V.: Interdisciplinary Complex Plasma Research. Heinrich-Heine-Universität Düsseldorf 2011.

Eisenhauer, F.: The Galactic Center at High Angular Resolution - Techniques and Observations. Technische Universität München 2011.

6 Tagungen, Projekte am Institut und Beobachtungszeiten

6.1 Tagungen und Veranstaltungen

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

Star Formation in Galaxies: The Herschel Era, Ringberg Castle, Germany, 19.-25.6.2011, Organisation: D. Lutz, L. Tacconi, E. Sturm.

Adaptive Optics for Extremely Large Telescopes II, Victoria, Canada, 25.-30.9.11, Organisation: J.-P. Veran, T. Fusco, Y. Clenet, A. Bouchez, R. Conan, J.-G. Cuby, R. Davies, B. Ellerbroek, S. Esposito, Y. Hayano, P. Hickson, N. Hubin, M. Kasper, M. Kenworthy, O. Lardiere, M. Hart, C. Max, R. Myers, F. Rigaut, T. Rimelle, N. Thatte, M. Troy.

Star formation across space and time: Frontier science with the LBT and other large telescopes, Tucson, AZ, USA, 30.3.-2.4.2011, Organisation: X. Fan, R. Green, T. Henning, R. Kennicutt, S. Kim, J. Kurk, R. Maiolino, C. Scarlata, T. Thompson, T. Thuan.

Kick-Off Meeting of the DFG priority program 1573, Freising, Germany, 2.-3.5.2011, Organisation: M. Schartmann, A. Burkert, R. Klessen.

Herschel Calibration Steering Group Meeting, MPE, Garching, Germany, 9.9.2011, Organisation: T.G. Müller.

Gas in Galaxies: from Cosmic Web to Molecular Clouds, Kloster Seeon, Germany, 14.-18.6.2011, Organisation: G. Kauffmann (co-chair), L. Staveley-Smith (co-chair), B. Catinella, E. de Blok, T. Heckman, B. Koribalski, M. Putman, J. Schaye, D. Schiminovich, L. Tacconi, M. Verheijen.

The Physics of Galaxy Formation, Durham, UK, 18.-22.7.2011, Organisation: C. Frenk (co-chair), S. White (co-chair), S. Ellison, T. Heckman, L. Hernquist, R. Ivison, G. Kauffmann, H.-W. Rix, J. Schaye, C. Steidel, L. Tacconi.

Multiwavelength Views of the ISM in High-Redshift Galaxies, Santiago, Chile, 27.-30.6.2011, Organisation: J. Wagg (chair), C. de Breuck (co-chair), A. Baker, C. Carilli, L. Infante, R. Ivison, R. Maiolino, A. Peck, D. Riechers, L. Tacconi, F. Walter, T. Wiklind, M. Yun.

Watching Galaxies Grow Up, Ringberg Castle, Germany, 4.-9.12.2011, Organisation: K. Jahnke (co-chair), A. van der Wel (co-chair), E.F. Bell, R. Bower, E. Daddi, J. Dunlop, S. Faber, M. Franx, A. Maccio, R. Maiolino, H.-W. Rix, R. Somerville, C. Steidel, L. Tacconi, P. van Dokkum.

Astronomy with Radioactivities VII, Phillip Island, Victoria, Australia, 1.-3.3.2011, Organisation: R. Diehl, M. Lugaro, D.H. Hartmann, N. Prantzos, M. Newington.

First International eROSITA conference, Garmisch-Partenkirchen, Germany, 17.-20.10.2011, Organisation: A. Merloni (Chair), P. Predehl (co-chair), M. Arnaud, Y. Balega, T. de Zeeuw, G. Evrard, A. Fabian, K. Nandra, S. Sazonov, A. Schwone, R. Sunyaev, Y. Ueda, M. Urry, J. Wilms.

First ATHENA Science Workshop, Garching bei München, Germany, 14.-15.6.2011, Organisation: K. Nandra (chair), X. Barcons, D. Barret, A. Decourchelle, T. Dotani, J.W. den Herder, D. Lumb, G. Matt, L. Piro, S. Sciortino, L. Strüder, M. Watson, N. White, D. Willingale.

EWASS 2011 EAS Symposium: "Combined Ra6.2011". St. Petersburg, Russland. Organisation: G. Paschmann.

Workshop on Particle Acceleration in Cosmic Plasmas, International Space Science Institute, Bern, Switzerland, 16.- 20.5.2011, Organisation: A. Balogh, A. Bykov, R.P.Lin, J. C. Raymond, M. Scholer.

Transport Processes and Accretion in YSOs, Schloss Ringberg, Germany, 7.-11.2.2011, Organization: G.J. Herczeg (chair), R. van Boekel (co-chair), A. Sicilia-Aguilar, S. Fromang, L. Hartmann, T. Henning, S. Matt, J. Muzerolle, A. Reiners, M. van den Ancker.

Formation and Early Evolution of Very Low Mass Stars and Brown Dwarfs, ESO, Garching, Germany, 11.-14.10.2011, Organization: I. Baraffe, M. Bate, A. Burkert, F. Comeron, E. van Dishoeck, G. Herczeg, K. Luhman, M. Petr-Gotzens (co-chair), T. Preibisch, T. Stanke, P. Teixeira, L. Testi (co-chair).

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.

Universidad 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 Gammaquel-

len 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; PKE-Nefedov.

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

Fraunhofer Institut für Festkörpertechnologie, München: ATHENA; eROSITA.

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

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 LUCIFER 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.

LMF Labor für Mikrozerspanung, Bremenn: Diamond turned optics for GRAVITY.

Ludwig-Maximilians-Universität, München: OmegaCAM; ASTRO-WISE; KMOS; MICADO; HETDEX.

Maier-Leibnitz Laboratorium, Garching: eROSITA.

Max-Planck-Institut für Astronomie, Heidelberg: GRAVITY; LUCIFER; Herschel-PACS; PanSTARRS; 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: CFEL.

Max-Planck-Institut für Biomedizinische Forschung: CFEL.

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

Max-Planck-Institut für Biophysische Chemie: 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.

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; LUCIFER.

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

Universität Düsseldorf: Komplexe Plasmen.

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.

Universitätssternwarte Göttingen: OmegaCAM.

Universität Siegen: Compton Kamera.

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

Universität Stuttgart: SOFIA.

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), Hera-

klion: Ausbau und Betrieb der Skinakas Sternwarte; Untersuchung von windakkretierenden Röntgendiffoppelsternsystemen; 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 Medicine.

Open University, Milton Keynes: Kataklysmische variable; 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 of Wales, Cardiff: Filter für Herschel-PACS und SOFIA.

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.

INFN Frascati: SIDDHARTA.

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

OAA/LENS Firenze: Herschel-PACS.

Osservatorio di Capodimonte, Napoli: OmegaCAM; ASTRO-WISE.

Politecnico di Milano: rauscharme Elektronik; Röntgendetektorenentwicklung.

University Bologna: EUCLID.

Universität Neapel: Komplexe Plasmen.

Japan

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

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

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

Tohoku University: Komplexe Plasmen.

University of Osaka: Astro H; ATHENA CCDs.

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

Sterrewacht Leiden: ASTRO-WISE; OmegaCAM.

University Eindhoven: Komplexe Plasmen; PlasmaLab.

University of Groningen, Kapteyn Institute: Rekonstruktion der Dichteverteilung im Universum; OmegaCAM; ASTRO-WISE.

Norwegen

Universität Trømsø: Komplexe Plasmen.

Österreich

Universität und TU Wien: Herschel-PACS.

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.

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 Astrofísica 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.

Lawrence Berkeley National Laboratory, Berkeley: Herstellung der Ge:Ga Detektorelemente für Herschel-PACS und SOFIA; Charakterisierung von GaAs-Detektorenmaterial.

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; Röntgendifpelpersteine in M31.

Space Telescope Science Institute, Baltimore: Galaxienentstehung.

STC: EUCLID.

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

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.

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 Pittsburgh: Galaxienentstehung.
 University of Texas, Austin: Galaxienentstehung; HETDEX.
 University of Toledo: Galaxienentstehung.
 University of Washington, Seattle: CLUSTER/CIS.
 University Space Research Association, Moffett Field: SOFIA.

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.

ASTRO-WISE: LMU München, Universität Bonn, Germany; Sterrewacht Leiden, University of Groningen, The Netherlands; Osservatorio di Capodimonte, Napoli, Italy; Observatoire de Meudon, Paris, France.

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; Instituto 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, Universita Padova, Dipartimento di Fisica, Universita 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 des Pesquisas Fisicas, Universidade Federal do Rio, Brasilien; Instituto de Ciencias del Espacio, Institut de Fisica d'Altes Energies, Centro de Investigaciones Energeticas Medioambientales y Tecnologicas, 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 Southhampton, 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.

Lucifer (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.

OmegaCAM – Wide Field Imager of the VST: ESO Garching, LMU München, Universität Bonn, Universitätssternwarte Göttingen, Germany; Sterrewacht Leiden, University of Groningen, The Netherlands; Osservatorio di Capodimonte, Napoli, OAP Padua, Italy.

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 Astrofisica de Canarias, Laboratorio de Astrofisica Espacial y Fisica 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.

ASTEQ GmbH, Kelkheim: Fertigung von Detektorarrays aus gedrücktem Ge:Ga und Bearbeitung von Detektorproben aus Galliumarsenid; SAFARI.

Bach Research corp, Boulder, USA: Gratings for Lucifer.

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

Berner & Mattner Systemtechnik GmbH, München: PK-4 documents, construction of plasma diagnostics system.

Bonerz engineering, Weiler-Simmerberg: Platinenentwicklung, Elektronikentwicklung.

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

Carl Zeiss, Jena: eROSITA Spiegel und Mandrels.

Cryovac, Troisdorf: Cryogenic Design for GRAVITY.

Drollinger, Birkenfeld: Vergoldung von Detektorteilen für FIFI-LS.

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, Nivelle, Belgien: Cooling System for eROSITA.

Freyer GmbH, Tuningen: PANTER.

Guido Lex Werkzeugbau GmbH, Miesbach: Strukturteile für FIFI-LS.

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

IMEC, Leuven, Belgium: Herstellung von kryogenen Ausleseelektronik-Schaltkreisen in neuer CMOS Technologie für IR-Detektoren auf Herschel-PACS; FIFI-LS; SAFARI.

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

Ingenieurbüro pfma, Haar-Salmdorf: SAFARI.

Ingenieurbüro Weisz, München: Design und Konstruktion für LUCIFER; 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: Hauptkontraktor für Herschel-PACS; Halbleiter-Detektoren Gamma-Astronomie; Plasmakristall-Experiment auf der Internationalen Raumstation; PKE; PK-3 Plus; PK-4; eROSITA-Spiegelsystem.

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

Laserjob GmbH, Grafrath: Entwicklung Röntgenbaffle für eROSITA.

Media Lavio Technologies, Borisio Parini, Italy: eROSITA mirror system.

Menlo Systems, Martinsried: Metrology Laser for GRAVITY.

Newport, Darmstadt: Cryogenic rotation stages for GRAVITY.

PFMA Munich: Mechanical Design for GRAVITY.

PNSensor, München: Entwicklung und Fertigung von Halbleiterdetektoren; Montage von Halbleiterdetektorsystemen; ARGOS.

Physik Instrumente Karlsruhe: Cryogenic Piezo Actuators for GRAVITY.

Scientific Instruments, Tucson, USA: Construction of the 16x16K CCD Mosaic Detector of the Wendelstein Wide Field Camera.

Siegert Electronics GmbH, Cadolzburg: Ausleseelektronik-Platinen für FIFI-LS; SAFARI.

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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7.2 Instrumentelle Veröffentlichungen

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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 2011 insgesamt 364 Vorträge auf Konferenzen, bei Seminaren und Kollquien und in der Öffentlichkeitsarbeit im In- und Ausland gehalten. Zusätzlich haben sie an insgesamt 94 astronomischen Telegrammen und Zirkularen mitgewirkt und 45 Postern 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 Kollquien) 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 “Veröffentlichungen“ eingesehen werden.

Tabelle 1: Vorträge, Telegramme/Zirkulare und Poster

Arbeitsgruppe	Vorträge	Telegramme, Zirkulare	Poster
Infrarot-/Submillimeter-Astronomie	133 (94)	3 (2)	8
Optische & Interpretative Astronomie	57 (43)	5 (1)	3
Hochenergieastrophysik	119 (75)	86 (48)	13
Theorie / Komplexe Plasmen	55 (32)	0 (0)	21

8 Öffentlichkeitsarbeit

Das MPE engagiert sich auch in der Öffentlichkeitsarbeit. Am Tag der “Offenen Tür“ im Oktober 2011 besuchten etwa 2500 Personen das MPE und wurden von unseren Mitarbeitern in Vorträgen, Ausstellungen und im direkten Gespräch über unsere Wissenschaft, unsere Instrumente und Arbeitsmethoden informiert. Im Jahre 2011 hielten MPE-Wissenschaftler 28 Vorträge vor einem Laien-Publikum (z.B. an Schulen, Planetarien, bei Astronomischen Vereinigungen). In Institutsführungen wurde 28 Gruppen von bis zu 35 Personen, hauptsächlich Schüler und Lehrer von naturwissenschaftlich orientierten Schulen, das Institut und seine Arbeit erläutert. Am “Girl’s Day“ informierten sich 50 Mädchen über das MPE, 13 Schüler/innen erhielten in ein- oder zweiwöchigen Praktika und 7 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/popus-d.html>).

Ralf Bender