Garching

Max–Planck–Institut für Astrophysik

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0 Allgemeines

0.1 Kurzgeschichte

Das Institut für Astrophysik ging hervor aus der gleichnamigen Abteilung am Göttinger MPI für Physik. Mit dem Umzug nach München im Jahre 1958 wurde dieses erweitert zum MPI für Physik und Astrophysik mit Heisenberg und Biermann als Direktoren. Die Arbeiten zur theoretischen Astrophysik lieferten grundlegende Erkenntnisse zur Sonnenphysik, Plasmaphysik und Sternstruktur. 1963 wurde als neues Teilinstitut das Institut für extraterrestrische Physik gegründet. 1991 erfolgte die Aufteilung in drei eigenständige Max-Planck-Institute, das MPI für Physik (MPP), das MPI für Astrophysik (MPA) und das MPI für extraterrestrische Physik (MPE). 2008 feierte das MPA sein 50-jähriges Jubiläum. Im Herbst 2009 bekam das MPA die Genehmigung für einen Erweiterungsbau. Ziel war es, in dem neuen Gebäude einen größeren Hörsaal (120 Sitze), die Computer Gruppe, sowie die Verwaltung (MPE/MPA) unterzubringen. Die Räumlichkeiten im Altbau sollen dann von den MPA Wissenschaftler/innen genutzt werden. Im April 2013 fand die Übergabe der neuen Räumlichkeiten statt, sodass voraussichtlich im Sommer 2013 auch die Umzüge alle abgeschlossen sein werden.

1 Personal und Ausstattung

1.1 Personalstand

Direktoren und Professoren:

W. Hillebrandt (Emeritierung im Februar 2012) E. Komatsu [2208](neuer Direktor ab 1.1.2012), R. Sunyaev [-2244], S.D.M. White [-2211] (Geschäftsführung).

Sekretariat und Verwaltung:

C. Rickl [Sekr. Geschäftsführung, -2201]

M. Ihle [Verwaltungsleiter, -3600]

Auswärtige Wissenschaftliche Mitglieder:

R. Giacconi, R.-P. Kudritzki, W. Tscharnuter.

Emeritierte Wissenschaftliche Mitglieder:

H. Billing, W. Hillebrandt (seit 1.3.2012), R. Kippenhahn, F. Meyer, H.U. Schmidt, E. Trefftz.

Wissenschaftliche Mitarbeiter:

Gruppenleiter

E. Churazov, B. Ciardi, T. Enßlin, M. Gilfanov, H.-Th. Janka, G. Kauffmann, T. Naab, E. Müller.

R. Angulo (bis 30.9.), A. Bauswein, M. Bell, M. Bergemann, B. Catinella, F. Ciaraldi-Schoolmann (1.9.-31.12.), A. Cooper (bis 31.8.), I. Cordero-Carrión, F. De Gasperin (1.9.-31.10.), M. Dijkstra, S. Fabello (1.4.-31.8.), J. Fu, M. Gabler, M. Gaspari (seit 1.9.), P. Girichidis (seit 1.4.), L. Graziani (seit 1.4.), T. Greif (bis 30.9.), A. Gualandris (bis 30.9.), B. Henriques, S. Hilbert (seit 1.10.), G. Hütsi, F. Iannuzzi (1.5.-31.8.), A. Jeeson-Daniel (1.3.-31.8.) J. Johansson, O. Just (seit 1.7.), R. Khatri, S. Khedekar, J. Kim (seit 1.8.), R. Krivonos (bis 30.9.), M. Kromer, D. Kruijssen, T.Y. Lam (seit 1.9.), K. Lind, G. Lemson, A. Marino (bis 31.12.), P. Mazzali, P. Montero, B. Moster, B. Müller, E. Müller, L. Oser (1.8.-31.10.) B. Pandey, A. Pawlik (seit 1.9.), D. Prokhorov (seit 1.10.), M. Reinecke, G. Ruchti (bis 30.9.), A. Ruiter, L. Sales, X. Shi (seit 1.10.), V. Silva (bis 31.1.), R. Smith (seit 1.10.), H.C. Spruit, A. Sternberg, T. Tanaka, S. Taubenberger, M. Ugliano (1.6.-31.10.), M. Viallet (seit 1.11.), C. Wagner (seit 1.10.), S. Walch, J. Wang (seit 1.1.) A. Weiss, A. Wongwathanarat, Z. Zhang (1.1.-31.10.) I. Zhuravleva (bis 30.11.)

Doktoranden:

[1] R. Andrassy*, M. Aumer*, P. Baumann, S. Benitez*, V. Biffi* (bis 31.5.), C.T. Chiang (seit 1.9.), A. Chung*, B. Ciambur*, F. Ciaraldi-Schoolmann (bis 30.8.), R. D'Souza* (seit 1.9.), F. De Gasperin* (bis 30.8.), P. Edelmann, S. Fabello* (bis 31.3.), A. Gatto* (seit 1.6.), L. Graziani* (bis 31.3.), F. Hanke, N. Hariharan*, M. Herzog* (bis 31.10.), M. Hilz (bis 31.3.), L. Hüdepohl, C.H. Hu* (seit 1.9.), M.L. Huang, F. Ianuzzi* (bis 30.4.), A. Jendreieck*, A. Jeeson-Daniel* (bis 28.2.), H. Junklewitz, O. Just (bis 30.6.), K. Kakiichi* (seit 1.9.), F. Koliopanos*, A. Kolodzig*, S. Komarov* (seit 1.9.), C. Laporte*, M. Li, Z.W. Liu, N. Lyskova*, Z. Magic*, F. Miczek (bis 31.5.), M. Molaro* (seit 1.9.) U. Nöbauer, D. Oliveira* (seit 1.11.), N. Oppermann, L. Oser (bis 31.7.), E. Pllumbi*, L. Porter*, S. Rau, T. Rembiasz*, M. Sasdelli*, M. Selig, S. Shi (seit 1.10.), M. Soraism* (seit 1.9.), I. Thaler*, M. Ugliano* (bis 30.5.), M. van Daalen* (bis 31.8.), J. von Groote, M. Wadepuhl (bis 31.1.), H. Wei* (seit 1.9.), T. Woods*, P. Wullstein* (seit 1.5.), R. Yates.

Diplomanden, Bachelor- und Masterstudenten:

L. Chang (seit 1.11.), S. Dorn (seit 15.10.), T. Ertl (bis 17.12.), M. Gänsler (bis 31.12.), M. Greiner (seit 1.5.), N. Heners (bis 30.5.), M. Klauser (bis 31.5.), T. Melson (bis 31.12.), B. Röttgers (seit 1.1.), A. Schnell (seit 1.11.), H. Übler (seit 1.9.), A. Voth (seit 1.4.), L. Winderling (bis 30.9.).

Technisches Personal - PLANCK Programmierer:

M. Bell, U. Dörl, T. Enßlin (group leader), W. Hovest, J. Knoche, F. Matthai (bis 30.6.), J. Rachen (bis 30.3.), M. Reinecke, T. Riller (bis 29.2.)

Systemadministratoren:

H.-A. Arnolds, B. Christandl, N. Grüner, H.-W. Paulsen (Leitung).

Sekretariat:

M. Depner, S. Gründl, G. Kratschmann, K. O'Shea, C. Rickl (Sekr. Geschäftsführung).

[1] *IMPRS (International Max-Planck Research School)

Bibliothek:

E. Blank, E. Chmielewski (Leitung), C. Hardt.

1.2 Gebäude und Bibliothek

Die Bibliothek befindet sich im Astrogebäude und wird von Wissenschaftlern zweier Institute genutzt, das Max-Planck-Institut für Astrophysik und extraterrestrische Physik. Die Bibliothek besitzt aktuell (2012) ca. 45.000 Bücher und Zeitschriftenbände, sowie Abonnements für ca. 200 Print Periodika und managt den Zugriff für ca 400 elektronischen Periodika. Seit dem 1.1.2010 wird für ein neues Publikationsrepositorium verwendet, das von der Max-Planck Digital Library in Zusammenarbeit mit dem Fachinformationszentrum Karlsruhe entwickelt worden ist.

1.3 Personelle Veränderungen

Barbara Catinella: Forschungsstipendium - Australisches Wissenschaftskollegium

Benedetta Ciardi: W2 Position am MPA

Mark Dijkstra: Gauss Lehrauftrag von der Universität Göttingen für 2012.

Michael Gabler: *Universe PhD Award Theory* für seine herausragende Doktorarbeit mit dem Titel "Coupled core-crust-magnetosphere oscillations of magnetars".

Wolfgang Hillebrandt: Lodewijk Woltjer Preis, European Astronomical Society. (Emeritierung, 28.2.)

Guinevere Kauffmann: neues Mitglied der Amerikanischen Wissenschaftsakademie (US National Academy of Science)

Eiichiro Komatsu: *Gruber Kosmologie Preis* für die WMAP Mission

Ralph Schönrich: erhielt den *Rudolf-Kippenhahn Preis* für die beste MPA Publikation 2011.

Rashid Sunyaev: Benjamin Franklin Medaille, Franklin Institute, Philadelphia, USA.

S. White: Marsilius-Vorlesung (Marsilius Medaille), Universität Heidelberg (10.5.).

2 Gäste

Yacine Ali-Haimoud (IAS Princeton, USA) 5.7. - 9.8.; Monique Alves Cruz (Univ. Sao Paolo, Brazil) 26.9. - 23.12.; Patricia Arevalo (Univ. Cat. Chile) 6.2. - 28.2. und 9.7. - 3.8.; Maria Celeste Artale (IAFE, Argentina) 2.5. - 30.10.; Jorge Cuadra (Univ. Cat. Chile) 6.2. - 28.2.; Thomas Baumgarte (Bowdoin College, USA) since 1.8.; Andrey Belyaev (St. Petersburg, Russia) 16.10. - 20.12; Sergey Blinnikov (ITEP Moscow, Russia) 17.7. - 4.8.; Julia Bryant (Sydney University, Australia) 15.8. - 30.8.; Pablo Cerda-Duran (Valencia, Spain) 25.9. - 30.10.; Yanmei Chen (Nanjing Univ., China) 1.6. - 30.7.; Dalong Cheng (Hong Kong Univ., China) 31.10. - 14.11.; Chi-Ting Chiang (Texas Cosmo Ctr., USA) 11.3. - 24.3.; Ena Choi (Princeton, USA) 1.3. - 23.3.; Alexandra Crai (Jacobs Univ. Germany) 1.7. - 26.8.; Rafael de Souza (Sao Paulo, Brazil) 23.01. - 22.2.; und 1.5. - 23.6.; Santiago Ismael Ferrero (Cordoba, Argentina) bis 31.1.; Jonathan Ganc (Austin Univ. Texas, USA) 29.8. - 8.12.; Giannios Dimitrios (Princeton, USA) 11.8. - 15.9.; Nicolas Gonzalez-Jimenez (Univ. Catolica de Chile) 2.3. - 4.6.; Hannes Grimm-Strele (Univ. Vienna, Austria) 1.9. - 31.10.; Carlos Hernandez-Monteagudo (CEFCA, Spain) 17.6. - 1.7.; Shaun Hotchkiss (Helsinki Univ.) 30.4. - 13.5.; Nail Inogamov (IKI Moscow, Russia) 16.7. - 19.8. und 12.11. - 14.12.; Emille Ishida (Sao Paulo, Brazil) 23.1. - 22.4.; Ildar Khabibullin (IKI Moscow, Russia) 24.7. - 26.8.; Baerbel Koribalski (CSIRO, Australia) 15.4. - 30.4.; Rolf Kudritzki (Hawaii University) 1.5. - 31.12.; Kerstin Kunze (Salamanca, Spain) 4.11. - 24.11.; Panos Labropoulos (Dwingeloo, The Netherlands) 9.4. - 22.4.; Jounghun Lee (Seoul, South Korea) 18.9. - 17.10.; Cheng Li (Shanghai Obs. China) 15.6. - 8.7.; Marcelo Miller Bertolami (La Plata Univ., Argentina) 15.6. - 15.8.; Stefano Mineo (Cambridge, USA) 1.6. - 15.6. und 12.11.

- 18.12.; Takashi Moriya (IPMU, Tokyo, Japan) 10.7. - 31.7.; Dmitrij, Nadyozhin (ITEP, Moscow, Russia) 22.3. - 21.4.; Atsushi Naruko (Kyoto University Japan) 4.11. - 18.11.; Ken Nomoto (Univ. Tokyo, Japan) 24.3. - 5.4.; Martin Obergaulinger (Univ. Valencia, Spain) 6.8. - 30.8.; Carlos Pachajoa (TUM, Munich, Germany) 1.8. - 19.10.; Elena Pian (INAF, Italy) 3.4. - 13.4. und 30.4. - 11.5.; Chris Reynolds (Maryland, USA) 18.6. - 20.7.; Aditya Rotti (IUCAA Pune, India) 10.9. - 31.10.; Sergey Sazonov (IKI, Moscow, Russia) 6.1. - 3.3. und 2.7. - 8.8.; Ralph Schönrich (Springfield, USA) 1.11. - 30.11.; Nikolai Shakura (IKI, Moscow, Russia) 1.11. - 30.11.; Lionel Siess (Univ. Libre de Bruxelles, Belgium) 1.6. - 31.7.; Kazuyuki Sugimura (Kyoto University Japan) 4.9. - 9.11.; Brankica Surlan (ASU, CAS, Czech Republic) 26.11. - 15.12.; Victor Utrobin (ITEP, Moscow, Russia) 1.9. - 31.10.; Shinya Wanajo (NAO, Tokyo, Japan) bis 31.3.; Enci Wang (Shanghai Obs. China) bis 15.2.; Wenting Wang (Shanghai Obs. China) bis 30.4.; Lizhi Xie (NAO, Beijing, China) 1.3. - 31.8.; Wei Zhang (NAO, Beijing, China) 15.6. - 15.7.;

3 Lehrtätigkeit, Prüfungen und Gremientätigkeit

3.1 Lehrtätigkeiten

T. Enßlin, SS 2012, LMU München

W. Hillebrandt, WS 2011/2012, TU München

H.-Th. Janka, WS 2011/2012 and SS 2012, TU München

E. Müller, WS11/12 and SS2012, TU München

H. Ritter, WS 12/13, LMU München

A. Weiss, SS 2012, LMU München

3.2 Sonstige Kurz-Vorlesungen

A. Pawlik: "Cosmological Simulations" (Postdoc/Staff Lecture Series on Cosmology, Garching, 14.11.)

H.C. Spruit: "Astrophysical fluid dynamics and MHD (Huazhong University of Science and technology, Wuhan, 31.5.–1.6.)

H.C. Spruit: "Physics of jets" (Shanghai Obervatory, 12.4.–15.4.)

R. Sunyaev: Sackler Lecture in Astrophysics, (IAS, Princeton 10.4.)

R. Sunyaev: Bohdan Paczynki Memorial Colloquium, Nicolaus Copernicus (Astronomical Center, Warsaw, Poland)

3.3 Gremientätigkeit

M. Bell: Beirat der LOFAR - Koordinierungsgruppe.

B. Ciardi: Mitglied des Wissenschaftsrat der IAU Kommission 47 (Kosmologie); – Vorsitzende des Wissenschaftlichen Rats von GLOW (German LOng Wavelength) Konsortium; – Projektleiterin der Arbeitsgruppe LOFAR am MPA. – Mitglied des Redaktionsausschuss der PASA (Publikation der Astronomical Society of Australia)

E. Churazov: Fachbeirat von Chandra Observatorium

T. Enßlin: – Berichterstatter für Planck Ausschuss; – Projektleiter des Datenanalysezentrum PLANCK am MPA;

W. Hillebrandt: – Internationaler Beratungsausschuss, Oskar Klein Centre, Stockholm; – Wissenschaftsrat, Zentrum für Astronomie, Univ. Heidelberg – Vorsitzender/Ausschuss ESO Observing Programmes Committee; – Senatsausschuss Wettbewerb, Leibniz Gemeinschaft; – Wissenschaftsrat PESSTO (Public ESO Spectroscopic Survey for Transient Objects) – Beratungskommittee Astrophysics, GIF (German-Israeli Foundation);

G. Kauffmann: – Mitglied des Organisationskommittee "Joint Kolloquium"; – Mitglied des Kavli Preis Kommittees; – Mitglied im Kommittee der deutschen LOFAR Gruppe; – Aspen Physics Centre Ausschuss

K. Lind: – Zuteilungskommittee für die Auswertung der Beobachtungsanträge von OPTICON Programm.

E. Müller: – Vorstandsmitglied des Sonderforschungsbereichs "Transregio Gravitationswellenastronomie"; – Vorsitzender des Benutzerkommittees und Beirat am Rechenzentrum Garching (RZG/IPP); – Betriebsratvorsitzender am MPA; – Mitglied des Bewerbungskommittee für den Kippenhahn Preis.

A. Weiss: Mitarbeitervertreter, CPT-Sektion der Max-Planck-Gesellschaft; – Mitglied des Organisationskommittee der IAU Kommission 35;

S. Walch: Stellvertretende Gleichstellungsbeauftragte.

S.D.M. White: – verschiedene Berufungskommissionen der CPT-Sektion der MPG; – Mitglied des Beratungsausschusses "Canadian Institute for Advanced Research, Cosmology and Gravity Program"; – Vorsitzender/Beratungsausschuss, ICC Durham Univ., England; – Vorsitz des Fachbeirat, Kavli Institut für Astronomie und Astrophysik, Peking, China; – – Miglied des Führungs-/Wissenschaftskommittee, Institut Lagrange de Paris, Frankreich.

4 Wissenschaftliche Arbeiten

Für Informationen zu den wissenschaftlichen Arbeiten unseres Instituts, besuchen Sie bitte unsere Webseite unter: **http://www.mpa-garching.mpg.de** und klicken Sie "Über das Institut" und "Jahresberichte" an. Sollten Sie kein Internet haben, können Sie gerne kostenlos einen Jahresbericht unter der Telefon-Nummer 089/30000-2214 anfordern.

4.1 Dissertationen

Abgeschlossen:

Alves-Cruz, Monique: S-process in extremely metal-poor stars. Ludwig-Maximilians Universität München.

Biffi, Veronica: Studying the physics of galaxy clusters by simulations and X-ray observations. Ludwig-Maximilians Universität München.

Ciaraldi-Schoolmann, Franco: Modeling delayed detonations of Chandrasekhar-mass white dwarfs. Technische Universität München.

de Gasperin, Francesco: The impact of radio-emitting supermassive black holes on their environment: the LOFAR view of the Virgo cluster. Ludwig-Maximilians Universität München.

Fabello, Silvia: HI properties of massive galaxies from stacking. Quenching mechanisms. Ludwig-Maximilians Universität München.

Graziani, Luca: Cosmological radiative transfer through metals in CRASH. Ludwig-Maximilians Universität München.

Herzog, Matthias: Hydrodynamical simulations of combustion processes at high densities in compact stars. Technische Universität München.

Hilz, Michael: Dissipationless merging and the evolution of early-type galaxies. Ludwig-Maximilians Universität München.

Iannuzzi, Francesca: Simulating structure formation with high precision: numerical techniques, dynamics and the evolution of substructures. Ludwig-Maximilians Universität München.

Jeeson-Daniel, Akila: Effect of inter-galactic medium on the observability of lyman alpha

emitters around the epoch of reionization. Ludwig-Maximilians Universität München.

Just, Oliver: Multidimensional, two-moment multi-group neutrino transport and its application to black-hole accretion tori as remnants of neutron-star mergers. Technische Universität München.

Miczek, Fabian: Simulation of low Mach number astrophysical flows. Technische Universität München (submitted).

Oser, Ludwig: Formation and evolution of massive early-type galaxies. Ludwig-Maximilians Universität München.

Ugliano, Marcella: Explosion and remnant systematics of core-collapse supernovae in one dimension. Technische Universität München.

Wadepuhl, Markus: Simulations of the formation of a Milky Way like galaxy. Technische Universität München.

Zhang, Zhongli: Study of populations of low-mass X-ray binaries in elliptical galaxies. Ludwig-Maximilians Universität München.

Laufend:

Robert Andrassy: Convective overshooting in stars by 3-D simulations. University of Amsterdam.

Michael Aumer: Simulations of Disk Galaxy Evolution. Ludwig-Maximilians-Universität München.

Patrick Baumann: Chemical composition of solar-type stars and its impact on planet-hosting. Ludwig-Maximilians-Universität München.

Sandra Benitez: Model-Independent Reconstruction of the Expansion History of the Universe. Technische Universität München

Chi-Ting, Chiang: Sparse sampling and position-dependent power spectrum: new and efficient approaches to galaxy redshift surveys and searches for non-Gaussianity. Ludwig-Maximilians-Universität München. Andrew Chung: High-redshift Lyman-α945; Emitters. Ludwig-Maximilians-Universität München.

Bogdan Ciambur: Extensions of semi-analytic modelling to the study of the galaxy population evolution with redshift. Ludwig-Maximilians-Universität München.

Richard D'Souza: Stellar Halos of Galaxies. Ludwig-Maximilians-Universität München.

Philipp Edelmann: Hydrodynamical simulations coupled to nuclear reaction networks in stellar astrophysics. Technische Universität München

Andrea Gatto: The impact of stellar feedback on the formation and evolution of molecular clouds. Ludwig-Maximilians-Universität München.

Florian Hanke: Three-dimensional simulations of core-collapse supernovae using a detailed neutrino transport description. Technische Universität München.

Wei Hao: Supermassive black hole binaries in Galaxy centres. Ludwig-Maximilians-Universität München.

Nitya Hariharan: Numerical Developments of the Radiative Transfer code CRASH. Technische Universität München.

Lorenz Hüdepohl: Neutrino cooling evolution of newly formed proto neutron stars. Technische Universität München.

Chia-Yu, Hu: A new star formation recipe for large-scale SPH simulations. Ludwig-Maximilians-Universität München.

Mei-Ling Huang: Radially resolved star formation histories of disk galaxies. Ludwig-Maximilians-Universität München.

Andressa Jendreieck: Stellar Parameter Estimation for Kepler Stars. Ludwig-Maximilians-Universität München.

Henrik Junklewitz: Magnetic Field Statistics and Information field theory. Ludwig-Maximilians-Universität München.

Kakiichi Koki: The high redshift universe: galaxy formation and the IGM. Ludwig-Maximilians-Universität München.

Filippos Koliopanos: Radiation processes in compact X-ray sources. Ludwig-Maximilians-Universität München.

Alexander Kolodzig: AGN in the eROSITA all-sky survey: Statistics and correlation properties. Ludwig-Maximilians-Universität München.

Chervin Laporte: Galaxies in clusters. Ludwig-Maximilians-Universität München.

Natalya Lyskova: Physics of hot gas in elliptical galaxies. Ludwig-Maximilians-Universität München.

Zazralt Magic: Theoretical models for cool stars including multidimensional atmospheres. Ludwig-Maximilians-Universität München.

Margherita Molaro: X-ray binaries' contribution to the Galactic ridge X-ray emission. Ludwig-Maximilians-Universität München.

Ulrich Nöbauer: A Monte Carlo Approach to Radiation Hydrodynamics in Astrophysical Environments. Technische Universität München.

David Oliveira: Cosmology and Dark Matter Dynamics with a GPU accelerated Tree Code. Ludwig-Maximilians-Universität München.

Niels Oppermann: Non-Gaussianities in Cosmology. Ludwig-Maximilians-Universität München.

Else Pllumbi: Nucleosynthesis studies for supernova and binary merger ejecta. Technische Universität München.

Laura Porter: Modelling dust in cool stellar and substellar atmospheres. Ludwig-Maximilians-Universität München.

Stefan Rau: Gravitational lensing studies of dark matter halos. Ludwig-Maximilians-Universität München.

Tomasz Rembiasz: Non-ideal MHD instabilities and turbulence in core collapse supernovae. Technische Universität München.

Michele Sasdelli: Principal Components Analysis of type Ia supernova spectra. Ludwig-Maximilians-Universität München.

Marco Selig: Information Theory Based High Energy Photon Imaging. Ludwig-Maximilians-Universität München.

Shao Li: Understanding the connection between AGNs and their host galaxies. Ludwig-Maximilians-Universität München.

Shao Shi: Disk dynamics in live halos. NAOC, China

Monika Soraism: Progenitors of Type Ia Supernovae. Ludwig-Maximilians-Universität München.

Irina Thaler: Solar magnetohydrodynamics. University of Amsterdam.

Marcel van Daalen: Correlation functions from the Millennium XXL simulation. Ludwig-Maximilians-Universität München.

Janina von Groote: Hydrodynamic modelling of the accretion-induced collapse of white dwarfs with detailed neutrino transport. Technische Universität München.

Tyrone Woods: The Progenitors of Type Ia Supernovae. Ludwig-Maximilians-Universität

München.

Philipp Wullstein: How does gas follow dark matter? Galaxy-Lyman-alpha-forest cross-correlation as a probe of a coupling between dark matter and dark energy. Ludwig-Maximilians-Universität München.

Rob Yates: Metal enrichment in galaxy formation models. Ludwig-Maximilians-Universität München.

4.2 Diplomarbeiten

Abgeschlossen:

Ertl, Thomas: Spherical simulations of stellar core collapse and supernova explosions for systemic exploration of the progenitor-remnant connection. Technische Universität München.

Gänsler, Marc: Eccentricity evolution of hierarchical triples of black holes under Kozai perturbations. Ludwig-Maximilians-Universität München.

Heners, Nikolaus: Uncertainties in stellar evolution calculations due to the treatment of convection. Karlsruher Institut für Technologie.

Klauser, Michael: Mixing of iron group elements in type Ia supernova ejecta and effects on synthetic oservables. Ludwig-Maximilians Universität München.

Melson, Tobias: Core-collapse supernova hydrodynamics on the Yin-Yang grid with PROMETHEUS-VERTEX. Ludwig-Maximilians-Universität München.

Winderling, Lars: On the Theory of Calibration. A probabilistic perspective. Ludwig-Maximilians-Universität München.

5 Tagungen, Projekte am Institut und Beobachtungszeiten

5.1 Beobachtungszeiten

M. Bergemann (MPA), K. Lind (MPA), M. Asplund (ANU), 15.7 – 21.7, Swedish Solar Telescope, La Palma, 'Solar Balmer lines as probes of convection and deviations from local thermodynamic equilibrium in the atmospheres of late-type stars'.

B. Catinella, S. Fabello (MPA), and researchers at other institutions in USA, France and China: Measuring the HI content of massive galaxies (GALEX Arecibo SDSS Survey). 01.02.–21.12. Are cibo radiotelescope, PR, USA (observations carried out remotely).

W. Hillebrandt, F.K. Röpke, M. Kromer, S. Taubenberger, S. Benitez, M. Sasdelli, A. Sternberg: several nights in 2012, University of Hawaii 2.2m Telescope, Mauna Kea, Hawaii, SNIFS, Measuring H0 with Type IIP Supernovae.

K. Lind (MPA), M. Bergemann (MPA), D. Kiselman (ISP, Stockholm, Sweden), TRIPPEL spectrograph at Swedish Solar Telescope, La Palma, 17.06.-21.06. Balmer lines in high spectral and spatial resolution.

H.C. Spruit: Swedish 1-m Solar telescope, La Palma, 27.8.–2.9., High-resolution spectropolarimetry of Sunspots.

A. Sternberg (MPA), G. Aldering (LBNL), W. Hillebrandt (MPA), J. Nordin (LBNL), S. Bongard (LPNHE), Y. Copin (IPNL), D. Fouchez (CPPM), M. Kowalski (U. Bonn), R. Pain (LPNHE), E. Pecontal (CRAL), S. Perlmutter (LBNL), C. Tao (CPPM), 28.7, Very Large Telescope array (VLT), Cerro Paranal, Chile, UVES, Probing the Circumstellar Environment of the Type Ia Supernova SN 2012cu.

A. Sternberg (MPA), G. Aldering (LBNL), W. Hillebrandt (MPA), J. Nordin(LBNL), S. Bongard (LPNHE), Y. Copin (IPNL), D. Fouchez (CPPM), M.Kowalski (U. Bonn), R. Pain (LPNHE), E. Pecontal (CRAL), S. Perlmutter(LBNL), C. Tao (CPPM), 30.7, Very

Large Telescope array (VLT), Cerro Paranal, Chile, Xshooter, Probing the Circumstellar Environment of the Type Ia Supernova SN 2012cu.

A. Sternberg (MPA), G. Aldering (LBNL), W. Hillebrandt (MPA), J. Nordin (LBNL), S. Bongard (LP NHE), Y. Copin (IPNL), D. Fouchez (CPPM), M. Kowalski (U. Bonn), R. Pain (LPNHE), E. Pecontal (CRAL), S. Perlmutter (LBNL), C. Tao (CPPM), 10.8, Very Large Telescope array (VLT), Cerro Par anal, Chile, UVES, Probing the Circumstellar Environment of the Type Ia Supernova SN 2012cu.

A. Sternberg (MPA), F. Patat (ESO), W. Hillebrandt (MPA), 7.11, Very Large Telescope array (VLT), Cerro Paranal, Chile, UVES, Probing the Circumstellar material of the Nearby Type Ia Supernova SN 2012fr.

A. Sternberg (MPA), F. Patat (ESO), W. Hillebrandt (MPA), 19.11, Very Large Telescope array (VLT), Cerro Paranal, Chile, UVES, Probing the Circumstellar material of the Nearby Type Ia Su pernova SN 2012fr.

A. Sternberg (MPA), F. Patat (ESO), W. Hillebrandt (MPA), 30.11, Very Large Telescope array (VLT), Cerro Paranal, Chile, UVES, Probing the Circumstellar material of the Nearby Type Ia Su pernova SN 2012fr.

A. Sternberg (MPA), F. Patat (ESO), W. Hillebrandt (MPA), 21.12, Very Large Telescope array (VLT), Cerro Paranal, Chile, UVES, Probing the Circumstellar material of the Nearby Type Ia Supernova SN 2012fr.

S. Taubenberger, W. Hillebrandt, P.A. Mazzali, F. Patat (ESO), N. Elias-Rosa (Barcelona), S. Benetti (Padova), F. Bufano (Padova), V. Stanishev (Lisbon), A. Pastorello (Padova): 6 nights in 2012, service observations, Calar Alto 2.2m Telescope, Calar Alto, Spain, CAFOS, The contribution of Supernovae to the cosmic chemical evolution.

S. Taubenberger, S. Benetti (Padova), K. Maeda (Tokyo), P.A. Mazzali, J. Sollerman (Stockholm), V. Stanishev (Lisbon), G. Leloudas (Copenhagen), F. Bufano (Padova), A. Harutyunyan (St. Cruz de La Palma), F. Patat (ESO), N. Elias-Rosa (Barcelona), M. Stritzinger (Stockholm), G. Pignata (Santiago de Chile), I. Maurer, S. Hachinger, F.K. Roepke (Wuerzburg), M. Kromer, W. Hillebrandt: 7.4 hr of service observations, VLT-Antu, Paranal, Chile, FORS2, Constraining the explosion mechanism of type Ia supernovae through late-phase spectroscopy.

S. Taubenberger, S. Benetti (Padova), K. Maeda (Tokyo), P.A. Mazzali, J. Sollerman (Stockholm), V. Stanishev (Lisbon), G. Leloudas (Copenhagen), F. Bufano (Santiago de Chile), A. Harutyunyan (St. Cruz de La Palma), F. Patat (ESO), N. Elias-Rosa (Barcelona), M. Stritzinger (Aarhus), G. Pignata (Santiago de Chile), S. Hachinger (Padova), F.K. Roepke (Wuerzburg), M. Kromer, W. Hillebrandt: 11.4 hr of service observations, VLT-Antu, Paranal, Chile, FORS2, Constraining the explosion mechanism of type Ia supernovae through late-phase spectroscopy.

5.2 Vorträge und Gastaufenthalte

5.3 Übersichtsvorträge

M. Bell: Sydney Magnetic Fields Workshop, (Sydney, Australia, 7.5)

B. Catinella: 'The physics of star formation and its role in galaxy evolution' (Trieste, Italy, 17.10.) – 'Disc galaxy formation in a cosmological context' (Heidelberg, 15.5.) – 'Global Properties of HI in Galaxies' (Green Bank, WV, USA, 1.4.)

E. Churazov: – First German ATHENA Science Workshop, (Garching, 13.1.) – Turbulence in Cosmic Structure Formation, (Tempe, AZ, 5.3. - 8.3.) – Science with eRosita and ART-XC aboard SRG, (Kazan, 3.9. - 7.9.) – Saint Petersburg Scientific Forum (Saint Petersburg, 8.10. - 12.10.) – High Energy Astrophysics, (Moscow, 24.12. - 27.12.)

B. Ciardi: – 'CosmoBias: International Meeting on Physical Bias in Cosmology" (Marseille, 22.5. - 25.7.) – 'The Epoch of Reionization: Theory - Simulations - Observations"

(Strasbourg, 23.4. - 27.7.)

M. Dijkstra: – 220th summer AAS, (Anchorage, Alaska, 10.6 - 14.6.) – 39th Cospar Meeting (Mysore, India, 14.7. - 22.7.)

T. Enßlin: The CTA EBL and cosmology physics case, (Munich, 28.11. - 30.11.)

M. Gilfanov: – Non-linear waves - 2012 (Nizhnii Novgorod, Russia, 29.2. - 6.3.) – Annual meeting of the Russian Astronomical Society (Moscow, Russia, 28.5. - 1.6.) – X-ray sky: from stars and black holes to cosmology (Kazan, Russia, 4.9. - 7.9.) – 2nd LOFT science meeting (Toulouse, 24.9. - 27.9.) – The physics of accretion on to BH (Bern, Switzerland, 8.10.-12.10.) – Observable signatures of stellar evolution (N.Arkhyz, Russia, 15.10.-19.10.)

W. Hillebrandt: – Facets of Strong-Interaction Physics (Hirschegg, Austria, 15.1. - 21.1.) – Spring Meeting of the DPG (Göttingen, 27.2. - 2.3.) – European Week of Astronomy and Space Science (Rome, Italy 1.7 - 6.7.)

H.-Th. Janka: – Workshop 'Connecting the Electromagnetic and Gravitational Wave Skies in the Era of Advanced LIGO', (Princeton, New Jersey, 30.4.–4.5.) – 'CompStar: the Physics and Astrophysics of Compact Stars',(Papeete, Tahiti, 4.6. - 8.6.) – 'Outstanding Problems in Massive Star Research the Final Stages', (St. Paul, MN, 30.9. - 3.10.) – 'Quarks to Universe in Computational Science (QUCS 2012)', (Nara, Japan, 13.12. - 16.12.)

G. Kauffmann: – Parameterisation of Galaxies in HI, (Cape Town, South Africa, 20.1. - 2.2.) – 2012 STScI May Symposium, Gas Flows in Galaxies, (Baltimore, USA, 7.5. - 10.5.) – European Week of Astrophysics and Space Science , (Rome, Italy, 1.7. - 6.7.) – Galaxy surveys using Integral Field Spectroscopy (Potsdam, Germany, 10.9. - 13.9.)

E. Komatsu: – International Workshop on Grand Unified Theories, (Kyoto, 15.3. - 17.3.) – Astronomische Gesellschaft, (Hamburg, 24.9. - 28.9.) – From Quantum to Cosmos 5 (Cologne, 9.10. - 12.10.) – Gravity and Cosmology 2012 (Kyoto, 18.11. - 22.12.)

D. Kruijssen: The current state of cluster formation simulations, (Sexten, Italy, 23.7. - 27.7.)

K. Lind: – Lithium in the Cosmos (IAP, Paris, 27.2. - 29.2.) – Gaia-ESO Survey Workshop: Spectrum analysis of FGK stars (OCA, Nice, France, 18.4. - 19.4.) – XII International Symposium on Nuclei in the Cosmos (Cairns, Australia, 5.8. - 10.8.) – Large Area Optical Spectroscopic Surveys: Science with 4MOST (AIP, Potsdam, 13.11. - 15.11.)

P. Mazzali: – GRBs and SNe, IAU Symp., (Nikko, Japan, 12.3.-16.3. – SNe and GRBs, Compact stars, (Tahiti, 4.6.-8.6.) – SNe Ib/c, SN Conference, (Garching, 10.9.-14.9.)

B. Müller: – Formations of Compact Objects: from the cradle to the grave (Tokyo, 7.3.-9.3.) – Supernovae Illuminating the Universe: from Individuals to Population (Garching, 10.9.-14.9.) – Workshop on Outstanding Problems in Massive Star Research (Minneapolis, 30.9.-3.10.)

E. Müller: – 'The role of magnetic fields in core collapse supernovae', DPG Spring Meeting, (Stuttgart, 12.3.) – 'Core Collapse Supernovae: simulations and observable', Workshop on Nuclear Astrophysics, (Russbach, Austria, 11.3. - 17.3.) – 'Simulation of Nuclear Burning in Astrophysics', EMMI-JINA, (GSI Darmstadt, 13.10.) – 'Early mixing in core-collapse supernova ejecta', Conference on Dust in Core-collapse Supernovae near & far: understanding its formation and evolution (Ascona, Switzerland, 5.11. - 8.11.)

Th. Naab: – Finnish Astronomical Society meeting (Helsinki, 4.6. - 6.6.) – IAU 2012 (Beijing, China 27.8. - 31.8.) – Galaxy and Black Hole ISF conference (Jerusalem, 12.10. - 15.10.)

A. J. Ruiter: – Supernovae Illuminating the Universe: from Individuals to Populations, (Garching, 10.9. - 14.9.)

Laura Sales: Disc Galaxy Formation in a Cosmological Context, (Heidelberg, 14.5. - 18.5.)

H.C. Spruit: 'Workshop to celebrate the 50-year anniversary of the SHAO' (Shanghai,

27.4.) – H.C. Spruit: Helioseismology workshop (ISSI Bern, 25.9.)

S. Walch: Triggered star formation, (Crete, 18.6. - 22.6.)

S. White: – Conference on New Horizons in Computational Astrophysics, (Davos, Switzerland, 29.1.-3.2.) – MPA-IFT Spring Workshop on Large Scale Structure (Madrid, Spain 23.4.-27.4.) – IAU 2012 (Beijing, China 27.8. - 31.8.) – Ringberg Conference "Galaxy clusters" (Tegernsee, Germany 19.11.-23.11.)

5.4 Kolloquiumsvorträge

T. W. Baumgarte: Physikalisch-Astronomische Fakultät, Universität Jena, 5.11.

M. Bergemann: – Case Western Reserve University, USA, 29.6. – Landessternwarte Heidelberg, 10.4. – Dr. Karl Remeis-Observatory Bamberg, 22.2.

B. Catinella: – Leiden Observatory, 22.11. – ASTRON, Dwingeloo, The Netherlands, 10.09. – Observatoire de Paris, 8.6. – Swinburne University of Technology, Melbourne, 31.7. – Sydney Institute for Astronomy, 27.7. – CSIRO Astronomy and Space Science, Epping, Sydney, 26.7. – Contributed talk at the 'Islands in the cosmos' workshop ESO, Garching, 28.11. – Talk at the 'Gas for cosmology in the nearby Universe' EWASS Symposium Rome, Italy, 3.7.

E. Churazov: – Astrophysics Colloquium Oxford, 6.2. – Astrophysics Colloquium Lebedev Institute, Moscow, 3.9.

B. Ciardi: Potsdam, Germany, 24.2.

Dijkstra, M.: – University of Gottingen, 15.3. – Ramann Institute, Bangalore, India 30.7. – 'Near Infrared Background and the Epoch of Reionization' Austin, TX, USA, 14.5.–15.5.

T. Enßlin: – Universe Cluster Garching, 4.7. – Technical University Munich, 14.9. – Stockholm University, 16.10.

M. Gilfanov: – Amsterdam University, 23.3. – Pulkovo Observatory, St.Petersburg, 3.12. – Ioffe Institute, St.Petersburg, 4.12. – Astrophysical seminar of the Lebedev Physical Institute LPI, Moscow, 12.12.

B.M.B Henriques: Invited Talk Leiden Observatory, 16.5.

J. Johansson: – MPI for Extraterrestrial Physics, Garching, 20.3. – Nanjing University, Nanjing, 5.9. – Shanghai Observatory, Shanghai, 7.9.

G. Kauffmann: MPI of Astronomy, Heidelberg, 12.3.

E. Komatsu: – Texas A & M Univ., 23.2. – Institute for Advanced Study, 3.4. – Academia Sinica, Taipei, 16.7. – Institut d'Astrophysique de Paris, 9.11.

D. Kruijssen: – ETH Zürich, Switzerland, 15.5. – ESTEC/ESA Noordwijk, The Netherlands, 5.10.

Th. Naab: – Instituto Nazionale di Astrofisica, Trieste 14.3. – University of Helsinki 30.5.

A. J. Ruiter: – University of Montreal, 23.3. – Warsaw University, 16.10.

H.C. Spruit: – Pontificia Universidad Catolica, Chile, 8.5. – Colloquium ESO Vitacura, Chile, 11.5.

S. Walch: ITA Heidelberg, 9.5.

A. Weiss: MPI f. Chemistry, Mainz, 9.5.

S. White: – Colloquium MPI f. Physik, München 12.6. – Colloquium in Mainz, 12.6.

5.5 Öffentliche Vorträge

C.L. Bennett, D. Larson, et al. (incl. E. Komatsu): Nine-Year Wilkinson Microwave Anisotropy Probe (WMAP) Astrophysicla Journal Suppl. 176 p.

M. Bergemann: MPA, Girl's Day, 26.4.

G. Börner: Excellence Cluster Universe, "Kosmologie" Dachau bei Lehrerfortbildung (Dachau, 6.7.) – *book contribution* Die Entwicklung des Kosmos: Vom Urknall zum komplexen Universum. Nova Acta Leopoldina NF116, **394**, 41-68.

V. Bromm, and T. Greif: Kosmologie: Die ersten Sterne im Universum. Geheimnisvoller Kosmos: Astrophysik und Kosmologie im 21. Jahrhundert. Verlag Weinheim, Wiley-VCH, 150-157.

C. Frenk and S. White: Dark matter and cosmic structure: Annalen der Physik, **524**, 507–534.

H.-Th. Janka: Congress Center Hamburg (19.6.) – Lehrerakademie Dillingen (19.9.) – Universität Bochum (27.10.)

R. Kippenhahn, A. Weigert and A. Weiss: Stellar Structure and Evolution. Book, Springer, Heidelberg 604.p

E. Komatsu: Institute for Physical and Mathematics of the Universe, Tokyo, Japan (28.7.) – Deutsches Museum (22.11.) – National Museum of Emerging Science and Innovation, Tokyo, Japan (2.12.)

D. Kruijssen: Volkssterrenwacht Bussloo, The Netherlands (21.12.)

Z. Magic: ANITA workshop, Monash Centre for Astrophysics, Melbourne (13.2.) –Fest of Facts, MSO/ANU, Canberra (18.5.)

B. Müller: Volkssternwarte Winzer (24.3.) –Astronomie-Club Vilshofen (10.10.)

E. Müller: VHS Garching (26.1.) – Fachhochschule Rosenheim (25.4.) – Lehrerfortbildung, Dachau (5.7.)

T. Padmanabhan, B. Schmidt et al. (incl. B. Ciardi): Commission 47: Cosmology (Book) Reports on Astronomy Cambridge, UK, Cambridge University Press, 260-267.

H.C. Spruit: Olbers Gesellschaft Bremen (9.10.) – Sternfreunde Nordenham (10.10.).

A. Weiss: Ludwig-Maximilians-Universität München (24.5.)

5.6 Kooperationen

E. Müller und H.-Th. Janka vom MPA sind mit zwei Teilprojekten am Sonderforschungsbereich/Transregio 7, "Gravitationswellenastronomie" beteiligt (Verwaltung des SFB in Jena) Der SFB beschäftigt sich hauptsächlich mit der theoretischen Modellierung der kosmischen Quellen der Gravitationsstrahlung, der Verbesserung des Detektorenkonzeptes und der Auswertung der zu erwartenden Gravitationswellensignale. (Beteiligte Institute: Univ. Hannover, Univ. Tübingen, Univ. Jena)

S. White und W. Hillebrandt sind in dem Transregio TR33 "Dunkles Universum" mit Teilprojekten involviert. Beteiligte Institute sind: Univ. Heidelberg, Univ. Bonn und Ludwig-Maximilians-Univ. München.

A. Asplund, W. Hillebrandt, S. White u.v.m. Excellence Cluster Universe - Origin and Structure of the Universe - Beteiligte Institute: Ludwig-Maximilians-Univ. München, Technische Univ. München, ESO sowie die Max-Planck Institute f. Astrophysik, extraterrestrisceh Physik, Plasmaphysik, Halbleiterlabor Neuperlach

5.7 EU Netzwerke - 2011 aktiv:

– "Planck Surveyor" (S. White, T. Enßlin);

– LACEGAL (Latin, American, Chinese, European Galaxy Formation Network) - Projektleiter am MPA: S. White. Beteiligte Institute: University of Durham, Universität Leiden, Agencia Estatal Consejo Superior De Investigaciones Cientifica, University of Sussex, University of Nottingham, Universita Degli Studi Di Trieste, Shanghai Astronomical Obser-

vator, Consejo Nacional De Investigaciones Cientificas Y Tecnicas, Universidade de Sao Paulo, Universidad Nacional Autonoma De Mexico, Pontificia Universidad Catolica De Chile, Instituto Nacional de Astrofisica Optica y Electronica Mexico, Institute for Theoretical Studies Heidelberg, Kapteyn Institute Groningen, Niederlande.

– CosmoComp (Early Stage Training Network) - Koordinator am MPA ist S. White. (Internationales Netzwerk) Beteiligte Institute sind: Durham, Nottingham, Sussex (England); Triest (Italien), Leiden (Niederlande), Barcelona (Spanien), Shanghai (China) und Buenos Aires, (Argentinien). Computer simulationen zum besseren Verständnis des frühen Universums.

5.8 Andere Netzwerke

DAAD - Projektbezogener Personenaustausch mit Tschechien (Projektleiter am MPA: Markus Kromer)

6 Veröffentlichungen

6.1 In Zeitschriften und Büchern

Ackermann, M. et al. (Fermi-LAT Collaboration incl. E. Komatsu): Anisotropies in the diffuse gamma-ray background measured by the Fermi LAT. Phys. Rev. D **85**, 083007 (2012).

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Alexandroff, R., R. Overzier, Z. Parigi et al: A search for active galactic nuclei in the most extreme UV-selected starbursts using the European VLBI Network. Mon. Not. R. Astron. Soc. **423**, 1325-1334 (2012).

Anderson, L., E. Aubourg, et al (incl. C. Wagner): The clustering of galaxies in the SDSS-III Baryon Oscillation Spectroscopic Survey: baryon acoustic oscillations in the Data Release 9 spectroscopic galaxy sample. Mon. Not. R. Astron. Soc. **427**, 3435–3467 (2012).

Angulo, R., V. Springel, S.D.M. White et al.: Scaling relations for galaxy clusters in the Millennium-XXL simulation. Mon. Not. R. Astron. Soc. **426**, 2046–2062 (2012).

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Bauswein, A. and H.-Th. Janka: Measuring neutron-star properties via gravitational waves from binary mergers. Phys. Rev. Lett. **108**, 011101 (2012).

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Ben-Ami, Sagi, et al. (incl. P. Mazzali): Discovery and Early Multi-wavelength Measurements of the Energetic Type Ic Supernova PTF12gzk: A Massive-star Explosion in a Dwarf Host Galaxy Astrophys. J. **760**, 33 (2012).

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Bergemann, M., R.-P. Kudritzki et al. (incl. K. Lind): Red Supergiant Stars as Cosmic Abundance Probes: NLTE Effects in J-band Iron and Titanium Lines. Astron. Astrophys. **751**, 156 (2012).

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