

Dr. Alexander Knebe

Departamento de Física Teórica
Facultad de Ciencias, Modulo C-8
Universidad Autónoma de Madrid
28049 Cantoblanco, Spain
+34 91 497-4878
alexander.knebe@uam.es
<http://popia.ft.uam.es/aknebe>

nationality: German
date of birth: 31/01/1970

CURRICULUM VITAE

summary

degrees:

07/2011	Accreditation as Associate Professor	ANECA ¹ , Spain
01/2010	Habilitation	Potsdam University, Germany
10/1999	PhD	Potsdam University, Germany
01/1996	Diploma	Christian-Albrechts-University Kiel, Germany

employment:

03/2009 – present	Ramon Y Cajal Fellow	Universidad Autónoma de Madrid, Spain
03/2005 – 02/2009	Emmy Noether Fellow	Astrophysical Institute Potsdam, Germany
10/2004 – 02/2005	Postdoctoral Researcher	Astrophysical Institute Potsdam, Germany
10/2001 – 05/2004	Postdoctoral Researcher	Swinburne University, Australia
06/1999 – 05/2001	Postdoctoral Researcher	Oxford University, United Kingdom

publications:

66 peer-reviewed publications published
1300+ citations
h-index 20

presentations:

20 colloquia talks
16 presentations at international conferences

teaching:

146 hours of classroom lecturing at undergraduate and graduate level
334 hours of laboratory courses at undergraduate and graduate level

supervision:

supervision of 6 PhD students
supervision of 2 MSc thesis
co-supervision of 4 PhD students

competitive grants:

Principal Investigator of grants amounting to more than EUR 800.000,-
Co-Investigator of grants amounting to more than EUR 8.5 Mio

services:

member of various committees (scientific, advisory, PhD, etc.)
referee for internationally recognized journals (MNRAS, ApJ, ApSS, etc.)
referee for various funding agencies (incl. Deutsche Forschungsgemeinschaft)

¹ Agencia Nacional de Evaluación de la Calidad y Acreditación

professional experience

- 03/2009 – present Ramon Y Cajal Fellow** *UAM, Madrid, Spain*
- The Constrained Local Universe
results (so far): **23 refereed + 6 submitted papers**
- 03/2005 – 02/2009 Head of “Emmy Noether” Group** *AIP, Potsdam, Germany*
- leading project *AMIGA: Adaptive Mesh Investigations of Galaxy Assembly*
 - supervision of several PhD and (under-)graduate students
 - lecturing at Potsdam University
 - invited (review) speaker at various (international) conferences
 - spokesman of the internal science committee at the AIP
results: **20 refereed papers**
- 10/2004 – 02/2005 Postdoctoral Researcher** *AIP, Potsdam, Germany*
- studying satellite galaxies in phase-space
 - elected member of the internal science committee at the AIP
results: **2 refereed papers**
- 06/2004 – 07/2004 Visiting Scientist** *UAM, Madrid, Spain*
- initiating/refreshing collaborative links
results: **1 refereed paper**
- 10/2001 – 05/2004 Postdoctoral Researcher** *Swinburne, Melbourne, Australia*
- deputy head of *Cosmology & Galaxy Formation Group*
 - coordinating scientific research and group briefings
 - investigating...
 - structure formation in non-standard models of the Universe,
 - the dynamics of satellite galaxies,
 - and developing software tools for cosmological simulations
 - (co-)supervision of one PhD student & several grad. students
 - teaching assistant for Swinburne Astronomy Online
 - establishing collaborative links between Australia & Europe
 - invited (review) speaker at various (international) conferences
results: **10 refereed papers**
- 06/2001 – 09/2001 Visiting Scientist** *UAM, Madrid, Spain*
- co-organizing workshop *Hydrodynamical Simulations of Galaxy Assembly*
- 06/1999 – 05/2001 Postdoctoral Researcher** *Oxford University, United Kingdom*
- scientific research in self-responsibility:
 - developing new C code for cosmological simulations
 - investigating galaxy formation in various cosmologies
 - co-supervision of PhD projects
 - tutoring undergraduates in Astronomy
 - presentations of work at various meetings and seminars
results: **4 refereed papers**

- 03/1996 – 05/1999 Research Assistant** *AIP, Potsdam, Germany*
- scientific research in collaboration with institute staff
 - comparing numerical techniques for cosmological simulations
 - studying the formation and evolution of galaxy clusters
- results: **6 refereed papers**
- 01/1993 – 01/1996 Graduate Assistant** *Christian-Albrechts-University, Kiel, Germany*
- tutoring undergraduates in theoretical physics and mathematics

education

- 07/2011 Accreditation as Associate Professor** *ANECA¹, Spain*
- 01/2010 Habilitation** *Potsdam University, Germany*
- field of research: computational cosmology
- 03/1996 – 05/1999 Post-Graduate Studies** *Potsdam University, Germany*
- field of research: computer simulations, clusters of galaxies
 - PhD degree, grade: magna cum laude
- 10/1996 Autumn School on Cosmology** *Garching, Germany*
- 10/1990 – 01/1996 Graduate Studies** *Christian-Albrechts-University, Kiel, Germany*
- main subjects: quantum mechanics, atom physics, mathematics
 - 1996: Diplom (M.Sc.), grade: 1.0
 - 1992: Vordiplom (B.Sc.), grade: 1.2
- 07/1989 – 10/1990 Civil Service** *Diakonisches Werk, Kiel, Germany*
- 07/1980 – 07/1989 Grammar School** *Ernst-Barlach-Gymnasium, Kiel, Germany*
- A-level (specialized in physics & mathematics), grade: 1.3
(German grading system: 1=best, 6=worst)

¹ Agencia Nacional de Evaluacion de la Calidad y Acreditacion, www.aneca.es

professional activities and services

since 2003 referee

- DFG (German Science Foundation)
- astrophysical journals (MNRAS, ApJ, PASA, A&A, Ap&SS)
- external examiner for several PhD theses

since 2001 work on committees

- Science Advisory Committee:
 - 2004-2009: (spokesman of) internal science committee at AIP
- Science Committee:
 - since 2010: *Cosmological Simulations Working Group* for EUCLID (coordinator of halo finding task within next generation simulations)
 - 2012: workshop *Subhaloes going Notts*, Nottingham, UK
 - 2010: workshop *Haloed going MAD*, UAM, Spain
 - 2008: symposium *Computational Astrophysics*, JENAM2008
 - 2006: workshop *Science with Supercomputers*, AIP, Germany
 - 2001: workshop *Hydro. Simulations of Galaxy Assembly*, UAM, Spain
- PhD committee:
 - 2010: Raul Sevilla, UAM
 - 2010: Francisco Martinez-Serrano, UAM
 - 2009: Kristin Riebe, Potsdam University
 - 2009: Jose Onorbe UAM
 - 2009: Steffen Knollmann, Potsdam University
- Time Allocation Committee (TAC):
 - 2008: AIP partner nights at the Large-Binocular Telescope

since 2001 other activities

- since 2011: colloquia at UAM
- since 2009: astro-ph club at UAM
- 2005-2009: astro-ph club at AIP
- 2005-2009: in-house colloquia at AIP
- 2001-2004: astro-ph club at Swinburne University

competitive grants and awards

principal investigator:

- 2010 workshop grant *ASTROSIM (EU funding)*
▪ “Haloes going MAD” (<http://popia.ft.uam.es/HaloesGoingMAD>)
grant volume: **EUR 11.500**
- 2008 Ramon Y Cajal Fellowship *MICINN, Spain*
▪ the phase-space structure of disrupting satellite galaxies
grant volume: **EUR 200.000**
- 2006 PhD grant *DFG, Germany*
▪ *Simulations of the Universe using modified Newtonian Dynamics (MOND)*
grant volume: **EUR 90.000**
- 2005 Adjunct Research Fellow *Swinburne University, Australia*
- 2004 Emmy Noether programme *DFG, Germany*
▪ *AMIGA: Adaptive Mesh Investigations of Galaxy Assembly*
grant volume: **EUR 500.000**
- 2002 research development grant *Swinburne University, Australia*
▪ *High-performance Cosmological Simulations*
grant volume: **AUD 10.000**

co-investigator:

- 2011 research grant *FP7-PEOPLE (EU funding)*
▪ Co-Investigator: “INVISIBLES Network”
grant volume: **EUR 4.000.000**
- 2011 supercomputing grant *PRACE (EU funding)*
▪ Co-Investigator: “Large Scale simulation of Ly-alpha and Ly-break galaxies in the high-z universe: Probing the epoch of reionization”
grant volume: **5.000.000 CPU hours**
- 2011 supercomputing grant *Barcelona Supercomputing Centre*
▪ Co-Investigator: “GALACTICA: GALaxies interACTing In a Cosmological hAbitat”
grant volume: **800.000 CPU hours**
- 2009 research grant *Comunidad de Madrid, Spain*
▪ Co-Investigator: “AstroMadrid – Astrofísica y Desarrollos tecnológicos en la Comunidad de Madrid”
grant volume: **EUR 900.000**
- 2009 research grant *MICINN Consolider-Igenio, Spain*

- member: “Multimessenger Approach for Dark Matter Detection”
grant volume: **EUR 3.200.000**

- 2009 research grant** *MICINN, Spain*
 - Co-Investigator: “El Proyecto de Cosmologia Numerica MareNostrum: Un Laboratorio virtual sobre la Evolucion del Universo”
grant volume: **EUR 240.000**

- 2009 research grant** *MICINN, Spain*
 - Co-Investigator: “Formación y Evolución de Galaxias en un Contexto Cosmológico desde las Simulaciones Numéricas”
grant volume: **EUR 240.000**

- 2009 exchange grant** *ASTROSIM (EU funding)*
 - grant to support Timur Doumler’s 4-months visit at Universidad Autonoma de Madrid to work on the development of AHF
grant volume: **EUR 2.000**

- 2008 visitor programme** *HPC-Europa (EU funding)*
 - grant to support Claudio Llinares’ 2-months visit at St. Andrew’s University to work on galactic dynamics under MOND
grant volume: **EUR 1.300**

- 2007 supercomputing grant** *DEISA (EU funding)*
 - Co-Investigator: “galaxy formation at different epochs and in different environments”
grant volume: **800.000 CPU hours**

- 2007 visitor programme** *HPC-Europa (EU funding)*
 - grant to support Claudio Llinares 3-months visit at St. Andrew’s University to work on MONDian cosmological simulations
grant volume: **EUR 2.000**

- 2005 visitor programme** *HPC-Europa (EU funding)*
 - grant to support Steffen Knollmann’s 3-months visit at Edinburgh University to work on MPI-parallelisation
grant volume: **EUR 2.000**

PUBLICATIONS

refereed journals

submitted

- [72] Di Cintio A., **Knebe A.**, Libeskind N., Brook C., Yepes G., Gottloeber S., Hoffman Y., Hess S.,
Size matters: the non-universal density profile of subhaloes in SPH simulations and implications for the Milky Way's dSphs, MNRAS
- [71] Alonso D., Garcia-Bellido J., Haugboel T., **Knebe A.**,
Halo abundance and shear in void models, MNRAS
- [70] Onorbe J., Gonzalez-Garcia C., Dominguez-Tenreiro R., **Knebe A.**, Martinez-Serrano F., Serna A.,
Assessing Massive Galaxy Major Mergers Rates from Cosmological Simulations, ApJL
- [69] Hellwing W., Knollmann S., **Knebe A.**, Juszkiewicz R.,
Dark matter haloes as probes of modified gravity, JCAP
- [68] Snaith O., Gibson B.K., Brook C., **Knebe A.**, Thacker R.,
The halo shape and evolution of polar disk galaxies, MNRAS
- [67] Hoffman Y., Metuki O., Yepes G., Gottloeber S., Ferero-Romero J., Libeskind N., **Knebe A.**,
A kinematical classification of the Cosmic Web, MNRAS

2012

- [66] Carlesi E., **Knebe A.**, Yepes G., Gottloeber S., Beltran-Jimenez J., Maroto A.L.,
N-body simulations with a cosmic vector for dark energy, MNRAS, in press
- [65] Di Cintio A., **Knebe A.**, Libeskind N., Hoffmann Y., Yepes G., Gottloeber S.,
Applying scale-free mass estimators to the Local Group in Constrained Local Universe Simulations, MNRAS, in press
- [64] Onions, J., **Knebe A.**, et al. (15 more authors),
SubHaloes going Notts: The SubHalo-Finder Comparison Project, MNRAS, in press
- [63] Libeskind N., Hoffman Y., **Knebe A.**, Metuki O., Steinmetz M., Gottloeber S., Yepes G.,
The large-scale orientation of angular momentum, MNRAS, 421, L137
- [62] Power C., **Knebe A.**, Knollmann S.R.,
The Dynamical State of Dark Matter Haloes in Cosmological Simulations I: Correlations with Mass Assembly History, MNRAS, 419, 1576

2011

- [61] Kazantzidis S., Lokas E., Mayer L., **Knebe A.**, Klimentowski J.,
Formation of Dwarf Spheroidal Galaxies via Mergers of Disk Dwarf, ApJ 740, L24
- [60] Carlesi E., **Knebe A.**, Yepes G., Gottloeber S., Beltran-Jimenez J., Maroto A.,
Vector dark energy and high-z massive clusters, MNRAS, 418, 2715
- [59] **Knebe A.**, Libeskind N., Doumler T., Yepes G., Gottloeber S., Hofmann Y.,
Renegade Subhaloes in the Local Group, MNRAS, 417, L56
- [58] Di Cintio A., **Knebe A.**, Libeskind N., Yepes G., Gottloeber S., Hofmann Y.,
Too small to succeed? Lighting up massive dark matter Milky Way subhaloes, MNRAS, 417, L74
- [57] Libeskind N., **Knebe A.**, Hoffman Y., Gottloeber S., Yepes G.,
Disentangling the dark matter halo from the stellar halo, MNRAS, 418, 336

- [56] Cattaneo A., Mamon G., Warnick K., **Knebe A.**,
How do galaxies acquire their mass?, A&A, 533, 5
- [55] **Knebe A.**, et al. (36 co-authors),
Haloes gone MAD: The Halo-Finder Comparison Project, MNRAS, 415, 2293
- [54] Snaith O., Gibson B., Brook C., Courty S., Sanchez-Blazquez P., Kawata D., **Knebe A.**,
A Comparison of Galaxy Group Luminosity Functions from Semi-Analytical Models, MNRAS, 415, 2798
- [53] Onorbe J., Martinez-Serrano F.J., Dominguez-Tenreiro R., **Knebe A.**, Serna A.,
Massive Galaxies at high-z: assembly patterns, structure & dynamics in the fast phase of galaxy formation, ApJL, 732, L32
- [52] **Knebe A.**, Libeskind N., Knollmann S.R., Martinez-Vaquero L., Yepes G., Gottloeber
The luminosities of backplash galaxies in constrained simulations of the Local Group, MNRAS, 412, 529
- [51] Libeskind N., **Knebe A.**, Hoffman Y., Gottloeber S., Yepes G., Steinmetz M.,
The preferred infall direction of in-falling satellite galaxies in the Local Group, MNRAS, 411, 1525

2010

- [50] Hellwing W., Knollmann S.R., **Knebe A.**,
Boosting hierarchical structure formation with self-interacting dark matter, MNRAS, 408, L104
- [49] **Knebe A.**, Libeskind N., Knollmann S., Yepes G., Gottloeber S., Hoffman Y.,
The impact of baryonic physics on the shapes and radial alignment of substructures in cosmological dark matter haloes, MNRAS, 405, 1119
- [48] Doumler T., **Knebe A.**,
Investigating the influence of magnetic fields upon structure formation with AMIGA - a C code for cosmological magnetohydrodynamics, MNRAS, 403, 453
- [47] Klimentowski J., Lokas E., **Knebe A.**, Gottloeber S., Martinez-Vaquero L., Yepes G., Hoffman Y.,
The grouping, merging and survival of subhaloes in a simulated Local Group, MNRAS, 402, 1899
- [46] Libeskind N., Yepes G., **Knebe A.**, Gottloeber S., Hoffman Y., Knollmann S.,
Constrained simulations of the Local Group: on the radial distribution substructures, MNRAS 401, 1889

2009

- [45] **Knebe A.**, Llinares C., Zhao H.-S.,
On the separation between baryonic and dark matter: evidence for phantom dark matter?, ApJ, 703, 2285
- [44] Wu X., Zhao H.-S., Wang Y., Llinares C., **Knebe A.**,
N-body simulations for testing the stability of triaxial galaxies in MOND, MNRAS, 396, 109
- [43] Knollmann S., **Knebe A.**,
AHF: AMIGA's Halo Finder, ApJ Supplement, 182, 608
- [42] **Knebe A.**, Wagner C., Knollmann S., Diekershof T., Krause F.,
On the starting redshift for cosmological simulations, ApJ, 698, 266
- [41] Llinares C., Zhao H.-S., **Knebe A.**,
Physics of Galactic Colliders: high-speed satellites in LCDM vs. MONDian cosmology, ApJ Letters, 695, L145

2008

- [40] Llinares C., **Knebe A.**, Zhao H.-S.,
Cosmological structure formation under MOND: a new numerical solver, MNRAS 391, 1778
- [39] Knollmann S., **Knebe A.**, Hofmann Y.,
Phase-space density profiles in scale-free cosmologies, MNRAS 391, 559
- [38] **Knebe A.**, Yahagi H., Kase H., Lewis G.F., Gibson B.K.,
The radial alignment of dark matter subhalos: from simulations to observations, MNRAS Letter, 388, L34
- [37] **Knebe A.**, Arnold B., Power C.B., Gibson B.K.,
The dynamics of satellite galaxies in warm dark matter cosmologies, MNRAS 386, 1029
- [36] **Knebe A.**, Draganova N., Power C.B., Yepes G., Hofmann Y., Gottloeber S.,
On the relation between radial alignment of dark matter subhalos and host mass in cosmological simulations, MNRAS 386, L56
- [35] Warnick K., **Knebe A.**, Power C.B.,
Tidal streams of disrupting subhaloes in cosmological simulations, MNRAS 385, 1859
- [34] **Knebe A.**, Power C.B.,
On the correlation between spin parameter and halo mass, ApJ 678, 621
- [33] Knollmann S., Power C.B., **Knebe A.**,
Dark matter halo profiles in scale-free cosmological simulations, MNRAS 385, 545
- [32] Holopainen J., Zackrisson E., **Knebe A.**, Nurmi P., Heinaemaeki P., Flynn C., Gill S.P.D., Riehm T.,
An analytical model of surface mass densities of cold dark matter halos, MNRAS 383, 720

2007

- [31] Einasto J., Einasto M., Tago E., Saar E., Huetsi G., Joever M., Liivamaegi L.J., Suhhonenko I., Jaaniste J., Heinaemaeki P., Mueller V., **Knebe A.**, Tucker D.,
Superclusters of galaxies from the 2dF redshift survey II: comparison with simulations, A&A 462, 397
- [30] Einasto J., Einasto M., Tago E., Saar E., Huetsi G., Joever M., Liivamaegi L.J., Suhhonenko I., Jaaniste J., Heinaemaeki P., Mueller V., **Knebe A.**, Tucker D.,
Superclusters of galaxies from the 2dF redshift survey I: the catalogue, A&A 462, 811

2006

- [29] **Knebe A.**, Wiessner V.,
Triaxial vs. spherical Dark Matter Halo Profiles, PASA 23, 125
- [28] Einasto J., Einasto M., Saar E., Tago E., Liivamaegi L.J., Joever M., Suhhonenko I., Huetsi G., Jaaniste J., Heinaemaeki P., Mueller V., **Knebe A.**, Tucker D.,
Luminous Superclusters: remnants from inflation, A&A 459, L1
- [27] **Knebe A.**, Dominguez A., Dominguez-Tenreiro R.,
Hydrodynamic approach to the evolution of cosmic structures II: N-body simulations, MNRAS 371, 1959
- [26] Power C., **Knebe A.**,
The impact of box size on the properties of DM haloes in cosmological simulations, MNRAS 370, 691
- [25] Warnick K., **Knebe A.**,
The sense of rotation of satellite galaxies in CDM haloes, MNRAS 369, 1253
- [24] Holopainen J., Flynn C., Gill S.P.D., **Knebe A.**, Gibson B.K.,
MACHOs in dark matter haloes, MNRAS 368, 1209

- [23] **Knebe A.**, Power C., Gill S.P.D., Gibson B.K.,
The importance of interactions for mass loss from satellite galaxies in CDM haloes, MNRAS 368, 741

2005

- [22] Bailin J., Kawata D., Gibson B.K., Steinmetz M., Navarro J.F., Brook C.B., Gill S.P.D., Iбата R.A., **Knebe A.**, Lewis G.F., Okamoto T.,
Internal Alignment of the Halos of Disk Galaxies in Cosmol. Hydro. Simulations, ApJ 627, L17
- [21] **Knebe A.**, Gill S.P.D., Kawata D., Gibson B.K.,
Mapping Substructure in Galaxy Clusters, MNRAS 357, L35
- [20] Gill S.P.D., **Knebe A.**, Gibson B.K.,
The evolution of galaxy cluster substructure III: the outskirts of clusters, MNRAS 356, 1327

2004

- [19] Gill S.P.D., **Knebe A.**, Gibson B.K., Dopita M.A.,
The evolution of galaxy cluster substructure II: linking dynamics to environment, MNRAS 351, 410
- [18] Gill S.P.D., **Knebe A.**, Gibson B.K.,
The evolution of galaxy cluster substructure I: a new identification method, MNRAS 351, 399
- [17] **Knebe A.**, Gill S.P.D., Gibson B.K.,
Interactions of Satellite Galaxies in Cosmological Dark Matter Halos, PASA 21, 216
- [16] **Knebe A.**, Gill S.P.D., Gibson B.K., Lewis G.F., Iбата R.A., Dopita M.A.,
Anisotropy in the Distribution of Satellite Galaxies, ApJ 603, 7
- [15] **Knebe A.**, Gibson B.K.,
Galactic Halos in MONDian Cosmological Simulations, MNRAS 347, 1055

2003

- [14] **Knebe A.**, Devriendt J.E., Gibson B.K., Silk J.,
Top-Down Fragmentation of a Warm Dark Matter Filament, MNRAS 345, 1285
- [13] Dominguez A., **Knebe A.**,
Comment on 'On the problem of initial conditions in cosmological simulations', EpL 63, 631
- [12] Little B., **Knebe A.**, Islam R.R.,
Warm Dark Matter versus Bumpy Power Spectra, MNRAS 341, 617
- [11] **Knebe A.**, Dominguez A.,
On the reliability of initial conditions for dissipationless cosmological simulations, PASA 20, 1

2002

- [10] Binney J.J., **Knebe A.**,
Two-Body Relaxation in Cosmological Simulations, MNRAS 333, 378
- [9] **Knebe A.**, Devriendt J.E., Mahmood A., Silk J.,
Merger Histories in Warm Dark Matter structure formation scenarios, MNRAS 329, 813

2001

- [8] **Knebe A.**, Islam R.R., Silk J.,
Bumpy Power Spectra and Galaxy Clusters, MNRAS 326, 109
- [7] **Knebe A.**, Green A., Binney J.J.,
MLAPM – a new C code for cosmological simulations, MNRAS 325, 845

2000

- [6] **Knebe A.**, Kravtsov A., Gottlöber S., Klypin A.,
On the effects of force resolution in cosmological N-body codes, MNRAS 317, 630
- [5] **Knebe A.**, Müller V.,
Quantifying substructure in Groups and Clusters of Galaxies, A&A 354, 761

1999

- [4] Einasto J., Einasto M., Tago E., Starobinsky A., Atrio-Barandela F., Müller V.,
Knebe A., Frisch P., Cen R., Andernach H., Tucker D.,
Steps towards the power spectrum of matter I: the mean spectrum of galaxies, ApJ 519, 441
- [3] Einasto J., Einasto M., Tago E., Müller V., **Knebe A.**, Cen R., Starobinski A.,
Atrio-Barandela F.,
Steps towards the power spectrum of matter II: the biasing correction, ApJ 519, 456
- [2] Einasto J., Einasto M., Tago E., Starobinsky A., Atrio-Barandela F., Müller V.,
Knebe A., Cen R.,
Steps towards the power spectrum of matter III: the primordial spectrum, ApJ 519, 469
- [1] **Knebe A.**, Müller V.,
Formation of Groups and Clusters of Galaxies, A&A 341, 1

conference proceedings & other publications

2011

- [20] **Knebe A.**, Power C.,
A correlation between spin parameter and dark matter halo mass, in EAS Publications Series, Vol. 44, 2011, p.53
- [19] Arnold B., **Knebe A.**, Power C., Gibson B.K.,
Dynamics of substructures in warm-dark matter cosmologies, in EAS Publications Series, Vol. 44, 2011, p.49
- [18] Llinares C., **Knebe A.**, Zhao H.-S.
Cosmological structure formation under MOND, in EAS Publications Series, Vol. 44, 2011, p.57

2010

- [17] **Knebe A.**,
Computational Cosmology, Habilitation thesis, Potsdam University, Germany

2009

- [16] Draganova N., **Knebe A.**,
On the relation between radial alignment of dark matter subhalos and host mass in cosmological simulations, in EAS Publications Series, Vol. 36, 2009, p.147

2006

- [15] **Knebe A.**,
MONDian Cosmological Simulations, in "Mass Profiles and Shapes of Cosmological Structures", EAS Publications Series, Vol. 20, p. 239

2005

- [14] **Knebe A.**,
How to simulate the Universe in a Computer, in "Gravity 2004", PASA 22, 184

2004

- [13] Gill S.P.D., **Knebe A.**, Gibson B.K.,
The dynamics of Cluster Substructure, in “Outskirts of Galaxy Clusters”, IAU Coll. 195,
p.280
- [12] Gill S.P.D., **Knebe A.**, Gibson B.K.,
Satellite Galaxies in Cosmological Dark Matter Halos, in “Satellites and Tidal Streams”,
ASP Conf. Ser. 327, p. 186

2003

- [11] **Knebe A.**,
Filaments in Warm Dark Matter, in “Galaxy Evolution”, RevMexAA, p.41
- [10] Gibson B.K., Gill S.P.D., **Knebe A.**, Lewis G.F., Flynn C.,
Tidal Debris as Probes of Dark Matter Halo Substructure, in “IAU Symposium 220”, p.159
- [9] Gill S.P.D., **Knebe A.**, Gibson B.K., Flynn C., Iбата R.A., Lewis G.F.,
Cosmology on a Mesh, in “IGM-Galaxy Connection”, Kluwer Academic Publishers,
p.199
- [8] **Knebe A.**, Little B., Islam R.R., Devriendt J.E., Silk J.,
Non-Standard Structure Formation Scenarios, Ap&SS 284, p.335

2001

- [7] **Knebe A.**,
How to simulate the Universe in a Computer, guest contribution for Swinburne
Astronomy Online

2000

- [6] Mueller V., **Knebe A.**,
Quantifying substructure in Galaxy Clusters, in “Large-Scale Structure in the X-ray
Universe”, Proceedings of the 20-22 September 1999 Workshop, Santorini, Greece,
eds. Plionis, M. & Georgantopoulos, I., Atlantisciences, Paris, France, p.389

1999

- [5] **Knebe A.**,
Formation and Evolution of Galaxy Clusters in Simulations, PhD thesis, Potsdam
University, Germany
- [4] Müller V., **Knebe A.**,
Virialisation of Dark Matter Halos, in “Galaxy Dynamics”, ASP Conf. Ser. Vol. 182, p.543
- [3] **Knebe A.**,
Virialization of Galaxy Clusters in Simulations, in “From Stars to Galaxies to the
Universe”, MPA proceedings, p.57

1998

- [2] **Knebe A.**,
Properties of Galaxy Clusters, in “Large Scale Structure: Tracks&Traces”, World
Scientific, p.175

1995

- [1] **Knebe A.**,
Lösungen der Dirac-Gleichung für semi-empirische Zentralfelder, diploma thesis (MSc), Kiel,
Germany

CONFERENCES & TALKS

presentations/talks

Review Talks

- 07/2008** “Dark Matter Halos in Cosmological Simulations”, **Ascona, Switzerland**
08/2007 “Dark Matter in Galaxies: A Defense of Λ CDM”, **St. Petersburg, Russia**
04/2004 “Newtonian N-body Dynamics”, **Sydney University, Australia**
07/2002 “Non-Standard Structure Formation Scenarios”,
Astronomical Society of Australia meeting, Australia

Colloquia

- 04/2011** “Near-Field Cosmology, a theoretician’s point of view”, **Salamanca, Spain**
02/2011 “Constrained Local Universe Simulations”, **Cambridge, UK**
06/2010 “Constrained Local Universe Simulations”, **Vienna, Austria**
06/2009 “Near-Field Cosmology, a theoretician’s point of view”, **Valencia, Spain**
05/2008 “Near-Field Cosmology, a theoretician’s point of view”, **Zürich, Switzerland**
04/2008 “Finding Dark Matter Halos in Cosmological Simulations”, **Warsaw, Poland**
04/2008 “Near-Field Cosmology, a theoretician’s point of view”, **Warsaw, Poland**
03/2008 “Near-Field Cosmology, a theoretician’s point of view”, **UCLan, UK**
04/2007 “Near-Field Cosmology, a theoretician’s point of view”, **Bonn, Germany**
12/2006 “Satellite Trek: integral-space, the final frontier?”, **Swinburne Uni, Australia**
12/2004 “Satellite Galaxies in Dark Matter Halos”, **CEA Saclay, France**
06/2004 “Evolution of Galaxy Cluster Substructure”, **UAM Madrid, Spain**
06/2004 “Evolution of Galaxy Cluster Substructure”, **Durham University, UK**
06/2004 “MLAPM, a C-code for cosmological simulations”, **Durham University, UK**
05/2004 “Dynamics of Cluster Substructure”, **ANU Canberra, Australia**
01/2004 “Revolutions of Satellite Galaxies”, **AIP, Germany**
05/2003 “MONDian Cosmological Simulations”, **Monash University, Australia**
04/2003 “MONDian Cosmological Simulations”, **Melbourne University, Australia**
11/2001 “Warm Dark Matter Models”, **Swinburne University, Australia**
06/2001 “Warm Dark Matter Models”, **UAM Madrid, Spain**
10/2000 “Cosmological N-body Simulations”, **University of Sussex, UK**
04/1999 “Virialisation of Groups & Clusters of Galaxies”, **University of Oxford, UK**

Conference Talks

- 04/2012** “Haloes going MAD”, **Miraflores de la Sierra, Spain**
06/2010 “Luminosities of Backsplash Galaxies”, **Madrid, Spain**
05/2010 “Haloes going MAD – Why? What? And How?”, **Madrid, Spain**
09/2008 “The correlation between spin parameter and halo mass”, **Vienna, Austria**
04/2006 “The Dynamics of Satellite Galaxies”, **NMSU, Las Cruces, USA**
09/2005 “Quasar mesolensing as a probe for substructures”, **AIP, Germany**
07/2005 “Galactic Haloes in MONDian Cosmology”, **IAP Paris, France**
09/2004 “Computational Cosmology”, **Helmholtz Institute Potsdam, Germany**
07/2003 “Galaxy Threshing”, **Swinburne University, Australia**
06/2003 “Galaxy Threshing”, **AIP, Germany**
01/2003 “Virtual Observatory: extension to theory”, **Sydney University, Australia**
07/2002 “Satellite Galaxies in Non-Standard Cosmologies”, **CAU Kiel, Germany**

- 02/2002** “Cosmological N-body Simulations”, **Monash University, Australia**
- 09/2001** “MLAPM—a new C code for Cosmological Simulations”, **UAM Madrid, Spain**
- 08/1998** “Formation and Virialisation of Galaxy Clusters”, **Bad Honnef, Germany**
- 06/1998** “Formation of Groups & Clusters of Galaxies”, **Ringberg Castle, Germany**

Poster

- 04/2002** “Top-Down Fragmentation of WDM Filaments”, **Cozumel, Mexico**
- 08/2000** “MLAPM – a new C code for Cosmological Simulation”, **UVic, Canada**
- 07/1997** “Galaxy Clusters in Cosmological Simulations”, **Potsdam Uni, Germany**

Public Lectures

- 10/2008** “Das Universum: Anfang vom Ende?”, **Insulaner Planetarium, Berlin**
- 09/2008** “Das Universum: Anfang vom Ende?”, **TU Berlin, Germany**
- 03/2008** “Das Universum: Anfang vom Ende?”, **Schülercampus Brandenburg**
- 02/2008** “Das Universum: Anfang vom Ende?”, **Kopernikus Gymnasium, Berlin**
- 09/2007** “Das Universum im Computer”, **Day of Open House, AIP, Germany**
- 02/2007** “Das Universum im Computer”, **Urania Berlin e.V., Germany**
- 09/2006** “Das Universum im Computer”, **Technical University Berlin, Germany**
- 09/2006** “Das Universum im Computer”, **Day of Open House, AIP, Germany**
- 07/2006** “Das Universum im Computer”, **JUWEL Summer University, Potsdam**

participation

-
- 04/2012** *MPA-IFT Spring Workshop*, **Miraflores de la Sierra, Spain**
 - 06/2011** *CLUES meeting*, **Brighton, UK**
 - 06/2010** *CLUES meeting*, **Madrid, Spain**
 - 06/2010** *Haloos going MAD*, **Madrid, Spain**
 - 06/2009** *The local Universe*, **Jablonna, Poland**
 - 09/2008** *JENAM 2008*, **Vienna, Austria**
 - 07/2008** *Frontiers in Computational Astrophysics*, **Ascona, Switzerland**
 - 08/2007** *Dynamics of Galaxies*, **St. Petersburg, Russia**
 - 09/2006** *The role of black holes in galaxy formation and evolution*, **Potsdam, Germany**
 - 04/2006** *Galaxies in the Cosmic Web*, **NMSU, Las Cruces, USA**
 - 07/2005** *Mass Profiles and Shapes of Cosmological Structures*, **IAP Paris, France**
 - 06/2004** *Adaptive-Mesh-Refinement Techniques in Cosmology*, **Durham University, UK**
 - 04/2004** *Gravity 2004*, **Sydney University, Australia**
 - 07/2003** *Galactic Chemodynamics*, **Swinburne University, Australia**
 - 06/2003** *The Local Group as a Cosmological Training Sample*, **Potsdam, Germany**
 - 01/2003** *The Low-Frequency Array*, **Sydney, Australia**
 - 01/2003** *Observing the Theoretical Universe*, **Sydney, Australia**
 - 07/2002** *Galaxy Evolution: From Approaches to Models*, **Kiel, Germany**
 - 07/2002** *36th annual meeting of the Australian Society of Astrophysics*, **Australia**
 - 04/2002** *Galaxy Evolution: Theory & Observations*, **Cozumel, Mexico**
 - 02/2002** *Theoretical Astrophysics in Australia*, **Monash University, Australia**
 - 09/2001** *Hydrodynamical Simulations of Galaxy Assembly*, **Madrid, Spain** (co-organizer)
 - 08/2000** *Computational Cosmology*, **University of Victoria, Canada**
 - 01/2000** *Biasing in Cosmology*, **Cambridge, UK**
 - 08/1998** *New Trends in Astrophysics & Cosmology*, **Bad Honnef, Germany**
 - 06/1998** *From Stars to Galaxies to the Universe*, **Ringberg Castle, Germany**
 - 07/1997** *Large Scale Structure: Tracks & Traces*, **Potsdam, Germany**

TEACHING EXPERIENCE§

classroom lecturing

- since 2009 Universidad Autonoma de Madrid**
- *Gravitational Lensing* (graduate level)
 - WS 2009/10: 5 x 2h = 10h
 - *Computational Astrophysics* (graduate level)
 - WS 2011/12: 8 x 2h = 16h
 - WS 2010/11: 6 x 2h = 12h
- June 2010 Vienna University**
- *Cosmology* (graduate level)
 - June 2010: 8 x 2h = 16h
- 2005 – 2008 Potsdam University**
- *Astronomy & Astrophysics I* (undergraduate level)
 - WS 2005/06: 8 x 2h = 16h
 - *Cosmology & The Early Universe* (graduate level)
 - SS 2007: 2 x 2h = 4h
 - SS 2005: 6 x 2h = 12h
 - *Computational Cosmology* (graduate level)
 - WS 2007/08: 15 x 2h = 30h
 - WS 2005/06: 15 x 2h = 30h

classroom total of 146h

lab courses

- since 2009 Universidad Autonoma de Madrid**
- *Computational Physics* (undergraduate level)
 - WS 2011/12: 15 x 2h = 30h
 - SS 2011: 14 x 2h = 28h
 - WS 2010/11: 18 x 2h = 36h
 - SS 2010: 14 x 2h = 28h
 - WS 2009/10: 16 x 2h = 32h
- 2007 – 2008 Potsdam University**
- *Computational Cosmology* (graduate level)
 - WS 2008/09: *Semi-Analytical Galaxy Formation* (total of 90h)
 - SS 2007: *The starting redshift for simulations* (total of 90h)

lab total of 334h

§ all scripts and exercises are available at <http://popia.ft.uam.es/aknebe>

teaching assistant/tutor

- 2001 – 2004 **Swinburne University**
- Supervising student projects
 - *Big Bang vs. Steady State theory*
 - *Software Simulations in Astrophysics*
 - *High-Energy Detectors*
 - *Search for extra-terrestrial Life*
- 1999 – 2001 **Oxford University**
- teaching undergraduates in Astronomy
- 1993 – 1996 **Christian-Albrechts-University, Kiel**
- tutoring undergraduates in theoretical physics & mathematics

student supervision

Ph.D.

- 11/2010 – present **Edoardo Carlesi** **UAM**
- *Structure Formation in Models with coupled Dark Matter-Dark Energy*
results: 1 refereed paper (so far)
- 08/2010 – present **Arianna Di Cintio** **UAM**
- *Constrained Simulations of the Local Group*
results: 2 refereed paper (so far)
- 11/2006 – 12/2009 **Claudio Llinares** **AIP**
- *Simulations of the Universe using Modified Newtonian Dynamics*
results: 4 refereed paper
- 06/2005 – 06/2009 **Kristin Riebe (ne. Warnick)** **AIP**
- *Satellite galaxies in cosmological dark matter haloes*
results: 3 refereed paper
- 01/2006 – 04/2009 **Steffen Knollmann** **AIP**
- *AMIGA: Adaptive Mesh Investigations of Galaxy Assembly*
results: 4 refereed paper
- 01/2002 – 06/2005 **Stuart Gill** **Swinburne University**
- *Satellite Galaxies in Cosmological Dark Matter Halos*
results: 6 refereed papers

M.Sc./Diploma

- 04/2008 – 04/2009 **Timur Doumler** *diploma student, AIP*
• *Cosmological Magneto-Hydrodynamics*
results: 1 refereed paper
- 02/2006 – 07/2007 **Bastian Arnold** *diploma student, AIP*
• *Satellite galaxies in Warm Dark Matter Cosmologies*
results: 1 refereed paper

Ph.D. (co-supervision)

- 05/2007 – 06/2007 **Nadia Draganova** *AIP*
• *The satellite galaxy – subhalo connection*
results: 1 refereed paper
- 07/2003 – 06/2007 **Janne Holopainen** *Tuorla Observatory*
• *Strong gravitational lensing in triaxial Dark Matter Halos*
results: 2 refereed papers
- 10/2000 – 05/2001 **Asim Mahmood** *Oxford University*
• *Merger Histories in Warm Dark Matter Structure Formation Scenarios*
results: 1 refereed paper
- 10/1999 – 05/2001 **Ranty Islam** *Oxford University*
• *Bumpy Power Spectra and Galaxy Clusters*
results: 2 refereed papers

work experience students

- 08/2005 – 09/2005 **Volkmar Wiessner** *AIP*
• *Analytical study of triaxial vs. spherical Dark Matter Halos*
results: 1 refereed paper
- 12/2002 – 02/2003 **Kylie Nankervis** *Swinburne University*
• *NFWtool: setting up Dark Matter Halos for MLAPM*
results: software tool
- 12/2001 – 02/2002 **Brett Little** *Swinburne University*
• *Warm Dark Matter versus Bumpy Power Spectra*
results: 1 refereed paper