

A/Prof. Alexander Knebe

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

CURRICULUM VITAE

summary

Degrees:

| | | |
|---------|--|--|
| 07/2011 | Accreditation as Professor "Titular" | ANECA ¹ , Spain |
| 05/2011 | Accreditation as Professor "Contratado Doctor" | ANECA, Spain |
| 01/2010 | Habilitation | Potsdam University, Germany |
| 10/1999 | PhD | Potsdam University, Germany |
| 01/1996 | Diploma (M.Sc.) | Christian-Albrechts-University Kiel, Germany |

Employment:

| | | |
|-------------------|-------------------------------------|-----------------------------------|
| since 03/2014 | Associate Professor | UAM, Spain |
| 03/2009 – 02/2014 | Ramon Y Cajal Fellow (tenure-track) | UAM, Spain |
| 03/2005 – 02/2009 | Emmy Noether Fellow | AIP, Germany |
| 10/2004 – 02/2005 | Postdoctoral Researcher | AIP, Germany |
| 10/2001 – 05/2004 | Postdoctoral Researcher | Swinburne University, Australia |
| 06/1999 – 05/2001 | Postdoctoral Researcher | Oxford University, United Kingdom |

Publications:

- 122 peer-reviewed publications (of which 30 are 1st author), 3 papers submitted
- >4200 citations
- h-index 33

Presentations:

- 25 colloquia talks
- 28 oral presentations at international meetings (incl. 6 reviews)

Teaching:

- 290 hours of classroom lecturing at undergraduate and graduate level
- 600 hours of laboratory courses at undergraduate and graduate level

Supervision:

- 9 PhD students (2 on-going), 8 MSc students
- co-supervision of 4 PhD students

Competitive Grants:

- Principal Investigator of grants amounting to EUR 1 Mio.
- Co-Investigator of grants amounting to more than EUR 16 Mio.

Services:

- member of various committees (scientific, advisory, PhD, etc.)
- referee for internationally recognized journals (MNRAS, ApJ, ApSS, etc.)
- referee for various funding agencies (e.g. DFG, ANPCYT)

¹ Agencia Nacional de Evaluación de la Calidad y Acreditación

professional experience

- since 03/2014 **Associate Professor (tenured)** *UAM, Madrid, Spain*
- near-field cosmology, the local group of galaxies, high-performance computing, alternative cosmologies, galaxy formation and evolution, large-scale structure of the universe
- results (so far): **30 refereed paper, 3 submitted**
- 03/2009 – 02/2014 **Ramon y Cajal Fellow (tenure-track)** *UAM, Madrid, Spain*
- near-field cosmology, alternative cosmologies
- results: **46 refereed**
- 03/2005 – 02/2009 **Head of “Emmy Noether” Group** *AIP, Potsdam, Germany*
- leading project “AMIGA: Adaptive Mesh Investigations of Galaxy Assembly”
- results: **20 refereed papers**
- 10/2004 – 02/2005 **Postdoctoral Researcher** *AIP, Potsdam, Germany*
- studying satellite galaxies in phase-space
- 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*
- structure formation in non-standard models of the Universe, the dynamics of satellite galaxies
- 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*
- developing new C code for cosmological simulations, investigating galaxy formation in various cosmologies
- results: **4 refereed papers**
- 03/1996 – 05/1999 **Research Assistant** *AIP, Potsdam, Germany*
- 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** *ANECA², 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)

² Agencia Nacional de Evaluación de la Calidad y Acreditación, <http://www.aneca.es>

professional activities and services

referee for...

- Ministerio de Economía y Competitividad (Spain)
- Deutsche Forschungs-Gemeinschaft (German Science Foundation)
- Swiss National Science Foundation
- Agencia Nacional de Promoción Científica y Tecnología (Argentina)
- Luxembourg Research Foundation (Luxembourg)
- SHARCNET High-Performance Computing Consortium (Canada)
- DiRAC Resource Allocation Committee (UK)
- astrophysical journals (MNRAS, ApJ, PASA, A&A, Ap&SS)
- external examiner for postdoc applications and professorships
- external examiner for PhD theses

committee work

- Science Committee:
 - since 2010: PI of [Mocking Astrophysics](#) program
 - since 2010: *Cosmological Simulations Working Group* for Euclid³
(Coordinator of several work packages)
 - 2013-15: member/chair of *MSc Tribunal*, UAM, Spain
- PhD committee:
 - 2017: Manuel Garcia, UAM
 - 2017: Sergio Rodriguez, UAM/IFT-CSIC
 - 2017: Ana Salvador, UAM/IFT-CSIC
 - 2014: Federico Sembolini, UAM
 - 2013: German Gomez, UAM
 - 2012: Miguel Zumalacarregiu, UAM
 - 2010: Raul Sevilla, UAM
 - 2010: Francois Sicard, Université Pierre et Marie Curie, Paris
 - 2010: Francisco Martinez-Serrano, UAM
 - 2009: Kristin Riebe, Potsdam University
 - 2009: Jose Onorbe, UAM
 - 2009: Steffen Knollmann, Potsdam University
- Time Allocation Committee:
 - 2015: Barcelona Supercomputing Centre
 - 2008: AIP partner nights at the Large-Binocular Telescope
- Science Advisory Committee:
 - 2004-2009: (spokesman of) internal science committee at AIP

³ sci.esa.int/euclid (M-class satellite mission of ESA within Cosmic Vision 2015-2025 cycle)

workshop organisation (SOC)

- 09/2017: conference [Fundamental Cosmology](#), Teruel, Spain
- 06/2017: workshop [Crystal Clear Clusters](#), Madrid, Spain (chair)
- 09/2016: workshop [MultiDark Galaxies](#), La Plata, Argentina
- 07/2016: workshop [CompaCT Clusters](#), Cape Town, South Africa
- 10/2016: workshop [Lightcones for Cosmology](#), Garching, Germany
- 07/2015: workshop [Cosmic CARNage](#), Pasadena, USA
- 06/2015: symposium [Gas in Galaxies](#) (EWASS 2015), Tenerife, Spain
- 03/2015: workshop [Perth Simulated Clusters](#), Perth, Australia
- 06/2014: workshop [nFTy Cosmology](#), Madrid, Spain (chair)
- 07/2013: workshop [Sussing Merger Trees](#), Sussex, UK
- 05/2012: workshop [Subhaloes going Notts](#), Nottingham, UK
- 05/2010: workshop [Haloes going MAD](#), UAM, Spain (chair)
- 09/2008: symposium [Computational Astrophysics](#) (JENAM 2008), Vienna, Austria
- 09/2001: workshop [Hydro. Simulations of Galaxy Assembly](#), UAM, Spain

other activities

- since 2017: coordinator of Erasmus program at UAM
- since 2015: coordinator of astrophysics MSc program at UAM
- since 2011: (co-)organizer of colloquia at UAM
- 2013-2016: outreach coordinator at UAM
- 2005-2009: (co-)organizer of in-house colloquia at AIP
- 2001-2009: astro-ph club at Swinburne University, AIP, and UAM

awards

- 2005-08: Adjunct Research Fellow, Swinburne University, Australia

competitive grants and awards

principal investigator:

- 11/2013 **research grant** *MINECO, Spain*
▪ Mocking the Universe: from LSS to our local neighbourhood
grant volume: **EUR 180.000**
- 11/2013 **workshop funding** *Severo Ochoa Excellence Fund, Spain*
▪ “nIFTy Cosmolgy”⁴
grant volume: **EUR 30.000**
- 05/2010 **workshop funding** *ASTROSIM (EU funding)*
▪ “Haloes going MAD”⁵
grant volume: **EUR 11.500**
- 03/2008-02/2014 **Ramon Y Cajal Fellowship** *MICINN, Spain*
▪ The phase-space structure of disrupting satellite galaxies
grant volume: **EUR 200.000**
- 11/2006-10/2009 **PhD funding** *DFG, Germany*
▪ Simulations of the Universe using modified Newtonian Dynamics (MOND)
grant volume: **EUR 90.000**
- 03/2005-02/2009 **Emmy Noether Fellowship** *DFG, Germany*
▪ AMIGA: Adaptive Mesh Investigations of Galaxy Assembly
grant volume: **EUR 500.000**
- 01/2002-12/2002 **research development grant** *Swinburne University, Australia*
▪ High-performance Cosmological Simulations
grant volume: **AUD 10.000**

co-investigator:

- 01/2017-12/2020 **research grant**, PI: Carlton Baugh *H2020-RISE (EU funding)*
▪ “LACEGAL: Latin American Chinese European Galaxy Formation Network”
grant volume: **EUR 1.350.000**
- 01/2014-12/2017 **research grant**, PI: Belen Gavela *H2020-ITN (EU funding)*
▪ “Elusives” Initial Training Network
grant volume: **EUR 3.800.000**
- 01/2014-12/2017 **research grant**, PI: Belen Gavela *H2020-RISE (EU funding)*
▪ “INVISIBLESplus”
grant volume: **EUR 2.000.000**
- 01/2014-12/2017 **research grant**, PI: Chris Power *ARC, Australia*
▪ “The Orbits and Interactions of Satellite Galaxies: A Fundamental Test of Cosmology”
grant volume: **AUD 360.000**

⁴ <http://popia.ft.uam.es/nIFTyCosmology>

⁵ <http://popia.ft.uam.es/HaloesGoingMAD>

- 01/2013-12/2016 **research grant**, PI: Geraint Lewis *ARC, Australia*
 ▪ “Observing the synthetic universe: revealing the dark cosmos with future telescopes”
 grant volume: **AUD 390.000**
- 01/2013-12/2016 **research grant**, PI: Gustavo Yepes *MICINN, Spain*
 ▪ “The MareNostrum Numerical Cosmology Project II”
 grant volume: **EUR 290.000**
- 08/2012-07/2016 **research grant**, PI: Santiago Avila-Perez *UAM, Spain*
 ▪ Supervisor of Santiago Avila-Perez’s PhD’s fellowship
 grant volume: **EUR 120.000**
- 12/2011-12/2015 **research grant**, PI: Belen Gavela *FP7-PEOPLE (EU funding)*
 ▪ “INVISIBLES” Initial Training Network
 grant volume: **EUR 4.000.000**
- 12/2009-12/2014 **research grant**, PI: Carlos Munoz *Consolider-Igenio, Spain*
 ▪ “MultiDark: Multimessenger Approach for Dark Matter Detection”
 grant volume: **EUR 3.200.000**
- 10/2009-09/2013 **research grant**, PI: Miguel Mas *Comunidad de Madrid, Spain*
 ▪ “Astrofísica y Desarrollos tecnológicos en la Comunidad de Madrid”
 grant volume: **EUR 900.000**
- 01/2010-12/2012 **research grant**, PI: Gustavo Yepes *MICINN, Spain*
 ▪ “The MareNostrum Numerical Cosmology Project”
 grant volume: **EUR 370.000**
- 01/2010-12/2012 **research grant**, PI: Rosa Dominguez *MICINN, Spain*
 ▪ “Formación y Evolución de Galaxias en un Contexto Cosmológico desde las Simulaciones Numéricas”
 grant volume: **EUR 240.000**
- 07/2013 **workshop funding** *COSMOCOMP (EU funding)*
 ▪ “Sussing Merger Trees”⁶
 grant volume: **EUR 20.000**
- 05/2012 **workshop funding** *COSMOCOMP (EU funding)*
 ▪ “Subhaloes going Notts”⁷
 grant volume: **EUR 20.000**
- 05/2016-12/2017 **supercomputing grant** *PRACE (EU funding)*
 ▪ “Down to the Dwarfs”

⁶ <http://popia.ft.uam.es/SussingMergerTrees>

⁷ <http://popia.ft.uam.es/SubhaloesGoingNotts>

grant volume: **25 mio. CPU hours**

- 11/2012-10/2013 supercomputing grant** *PRACE (EU funding)*
▪ “Our Neighbourhood in the Universe: From First Stars to the Present Day”
grant volume: **26 mio. CPU hours**
- 05/2011-04/2012 supercomputing grant** *PRACE (EU funding)*
▪ “Large Scale simulation of Ly-alpha and Ly-break galaxies in the high-z universe: Probing the epoch of reionization”
grant volume: **5 mio. CPU hours**
- 08/2011-12/2011 supercomputing grant** *Barcelona Supercomputing Centre*
▪ “GALACTICA: GALaxies interACTing In a Cosmological hAbitat”
grant volume: **800.000 CPU hours**
- 01/2008-12/2008 supercomputing grant** *DEISA (EU funding)*
▪ “Galaxy Formation at different Epochs and in different Environemts”
grant volume: **800.000 CPU hours**
- 05/2012-08/2012 visitor programme** *UAM, Spain*
▪ grant to support Arianna Di Cintio's 3-months visit at the AIP working with Stefan Gottloeber and Noam Libeskind
grant volume: **EUR 1.800**
- 03/2012-06/2012 visitor programme** *UAM, Spain*
▪ grant to support Edoardo Carlesi's 3-months visit at the University of Sydney working with Geraint Lewis
grant volume: **EUR 2.400**
- 05/2009-09/2009 visitor programme** *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**
- 06/2008-07/2008 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**
- 08/2007-11/2007 visitor programme** *HPC-Europa (EU funding)*
▪ grant to support Claudio Llinares 3-months visit at St. Andrew's University to work on MONDian cosmological simualtions
grant volume: **EUR 2.000**
- 01/2007-03/2007 visitor programme** *HPC-Europa (EU funding)*
▪ grant to support Steffen Knollmann's 3-months visit at Edinburgh University to work on MPI-paraellisation
grant volume: **EUR 2.000**

PUBLICATIONS

refereed journals

submitted

- [125] Knebe A., et al. (33 co-authors)
Cosmic CARNage: on the calibration of galaxy formation models, MNRAS
- [124] Dixon K., Iliev I.T., Gottloeber S., Yepes G., **Knebe A.**, Libeskind N., Hoffman Y.
Reionisation of the Milky Way, M31, and their satellites I: reionisation history and star formation, MNRAS
- [123] Choque N., Smith R., Candlish G., Gibson B.K., **Knebe A.**, Fellhauer M.,
Tidal mass loss in the galaxy group environment, and pollution of the galaxy cluster population by pre-processed galaxies, MNRAS

2018

- [122] Knebe A., et al. (20 co-authors)
MultiDark Galaxies: data release and first results, MNRAS, in press

2017

- [121] Cui W., Knebe A., Yepes G., Yang X., Borgani S., Kang X., Power C., Stavley-Smith L.,
The large-scale environment from cosmological simulations I: baryonic cosmic web, MNRAS
- [120] Kubik B., Libeskind N., **Knebe A.**, Courtois H., Yepes G., Gottloeber S., Hoffman Y.,
Universal subhalo accretion in cold and warm dark matter cosmologies, MNRAS, in press
- [119] Libeskind N. et al. (30 co-authors),
Tracing the Cosmic Web, MNRAS, in press
- [118] Snaith O.N., Bailin J., **Knebe A.**, Stinson G., Wadsley J., Couchman H.,
Halo at the ragged edge: Rvir is the interface between the halo and the LSS, MNRAS, in press
- [117] Maji M., Zhu Q., Li Y., Charlton, Hernquist L., **Knebe A.**,
The formation and evolution of star clusters in interacting galaxies, ApJ, in press
- [116] Pujol A., et al. (37 co-authors)
nFTy Cosmology: the clustering consistency of galaxy formation models, MNRAS, in press
- [115] Cui W., Power C., Borgani S., **Knebe A.**, Lewis G.F., Murante G., Poole G.B.,
On the dynamical state of galaxy clusters: insights from cosmological simulations II, MNRAS, 464, 2502
- [114] Arthur, J., Pearce F., Gray M., Elahi P., **Knebe A.**, Beck A., Cui W., Cunnama D., Dave R., February, Huang S., Katz N., Kay S., McCarthy I., Murante G., Perret V., Power C., Puchwein E., Saro A., Sembolini F., Teyssier R., Yepes G.,
nFTy galaxy cluster simulations V: comparison of the cluster infall region, MNRAS, 464, 2027

2016

- [113] Ocvirk P., Gillet N., Shapiro P., Aubert D., Iliev I.T., Teyssier R., Yepes G., Choi J.-H., Sullivan D., **Knebe A.**, Gottloeber S., D'Aloisio A., Park H., Hoffman Y., Stranez T.,
Cosmic Dawn (CoDa): the first radiation-hydrodynamics simulation of reionisation and galaxy formation in the Local Universe, MNRAS, 463, 1462
- [112] Wang Y., Pearce F.R., **Knebe A.**, Schneider A., Srisawat C., Tweed D., Jung I., Han J., Helly J., Onions J., Elahi P., Thomas P.A., Behroozi P., Yi S.-K., Rodriguez-Gomez V., Mao Y.-Y., Jing Y., Lin W.,
Sussing Merger Trees: stability and convergence, MNRAS, 459, 1554

- [111] Carlesi E., Sorce J., Hoffman Y., Gottloeber S., Yepes G., Libeskind N., Pilipenko S., **Knebe A.**, Courtois H., Tully R.B., Steinmetz M.,
Constrained Local Universe Simulations: a local group factory, MNRAS, 458, 900
- [110] Cui W., Power C., **Knebe A.**, Kay S.T., Sembolini F., Elahi P., Yepes G., Pearce F., Cunnamea D., Beck A., Dalla Vecchia C., Dave R., February S., Huang S., Hobbs A., Katz N., McCarthy I., Murante G., Perret V., Puchwein E., Read J., Sar A., Teyssier R., Thacker R.,
nFTy galaxy cluster simulations IV: quantifying the influence of baryons on halo properties, MNRAS, 458, 4052
- [109] Elahi P., **Knebe A.**, Pearce F.R., Power C., Yepes G., Cui W., Cunnamea D., Kay S., Sembolini F., Beck A., Dave R., February S., Huang S., Katz N., McCarthy I., Murante G., Perret V., Puchwein E., Saro A., Teyssier R.,
nFTy galaxy cluster simulations III: the similarity & diversity of galaxies & subhaloes, MNRAS, 458, 1096
- [108] Sembolini F., Elahi P., Pearce F.R., Power C., **Knebe A.**, Kay S.T., Cui W., Yepes G., Beck A., Borgani S., Cunnamea D., Dave R., February S., Huang S., Katz N., McCarthy I., Murante G., Newton R., Perret V., Puchwein E., Saro A., Schaye J., Teyssier R.,
nFTy galaxy cluster simulations II: radiative models, MNRAS, 459, 2973
- [107] Sembolini F., Yepes G., Pearce F., **Knebe A.**, et al., (23 more co-authors),
nFTy galaxy cluster simulations I: dark-matter and non-radiative models, MNRAS, 457, 4063
- [106] Cui W., Power C., Biffi V., Borgani S., Murante G., Fabjan D., Knebe A., Lewis G.F., Poole G.,
How does our choice of observable influence our estimation of the centre of a galaxy cluster? Insights from cosmological simulations, MNRAS, 456, 2566

2015

- [105] R. Smith, R. Sanchez-Janssen, M.A. Beasley, G.N. Candlish, B.K. Gibson, T.H. Puzia, J. Janz, **A. Knebe**, J.A.L. Aguerri, T. Lisker, G. Hensler, M. Fellhauer, L. Ferrarese, S.K. Yi,
The Sensitivity of Harassment to Orbit: Mass Loss from Early-Type Dwarfs in Galaxy Clusters, MNRAS, 454, 2502
- [104] Behroozi P., **Knebe A.**, Pearce F.R., Elahi P., Han J., Lux H., Mao Y.-Y., Muldrew S.I., Potter D., Srisawat C.,
Major Mergers Going Notts: Challenges for Modern Halo Finders, MNRAS, 454, 3020
- [103] Elahi P., Lewis G.F., Power C., Carlesi E., **Knebe A.**,
Hidden from View: Coupled Dark Sector Physics and Small Scales, MNRAS, 452, 1341
- [102] Chuang C.-H., Zhao C., Prada F., Munari E., Avila S., Izard A., Kitaura F.-S., Manera M., Monaco P., Murray S., **Knebe A.**, Scoccola C., Yepes G., Garcia-Bellido J., Marin F., Mueller V., Skibba R., Crocce M., Fosalba P., Gottloeber S., Klypin A., Power C., Tao C., Turchaninov V.,
nFTy Cosmology: Galaxy/halo mock catalogue comparison project on clustering statistics, MNRAS, 452, 686
- [101] **Knebe A.**, et al. (35 co-authors),
nFTy Cosmology: a comparison of galaxy formation models, MNRAS, 451, 1856
- [100] Avila S., Murray S., **Knebe A.**, Power C., Robotham A., Garcia-Bellido J.,
HALOGEN: a new tool for the fast generation of mock halo catalogues, MNRAS, 450, 1856
- [99] Gillet N., Ocvirk P., **Knebe A.**, Libeskind N., Yepes G., Gottloeber S., Hoffman Y.,
Vast planes of satellites in a high resolution simulation of the Local Group: comparison to Andromeda, ApJ, 800, 34

- [98] Hotchkiss S., Nadathur S., Gottloeber S., Iliev I.T., **Knebe A.**, Watson W., Yepes G., *The Jubilee ISW Project II: observed and simulated imprints of voids and superclusters on the cosmic microwave background*, MNRAS, 446, 1321
- [97] Sutter P.M., Carlesi E., Wandelt B.D., **Knebe A.**, *On the observability of coupled dark energy with cosmic voids*, MNRAS, 446, L1

2014

- [96] Lee J., Yi S.K., Elahi P.J., Thomas P.A., Pearce F.R., Behroozi P., Han J., Helly J., Jung I., **Knebe A.**, Mao Y.-Y., Onions J., Rodriguez-Gomez V., Schneider A., Srisawat C., Tweed D., *Sussing Merger Trees: the impact of halo merger trees on galaxy properties in a semi-analytical model*, MNRAS, 445, 4197
- [95] Ocvirk P., Gillet N., Aubert D., **Knebe A.**, Libeskind N., Chardin J., Gottloeber S., Yepes G., Hoffman Y., *The reionization of galactic satellite populations*, ApJ, 794, 20
- [94] Sutter P.M., Elahi P., Falck B., Onions J., Hamaus N., **Knebe A.**, Srisawat C., Schneider A., *The life and death of cosmic voids*, MNRAS, 445, 1235
- [93] Libeskind N., **Knebe A.**, Hoffman Y., Gottloeber S., *The universal nature of subhalo accretion*, MNRAS, 433, 1274
- [92] Hoffman K., Planelles S., Gaztanaga E., **Knebe A.**, Pearce F., Lux H., Onions J., Muldrew S., Elahi P., Behroozi P., Ascasibar Y., Han J., Maciejewski M., Merhan M., Neyrinck M., Ruiz A., Sgro M., *Subhaloes going Notts: subhaloes as tracers of the dark matter halo shape*, MNRAS, 442, 1197
- [91] Avila S., **Knebe A.**, Pearce F., Schneider A., Srisawat C., Thomas P., Behroozi P., Elahi P., Han J., Mao Y.-Y., Onions J., Rodriguez-Gomez V., *Sussing Merger Trees: the influence of the halo finder*, MNRAS, 441, 3488
- [90] Di Cintio A., Brook C.B., Dutton A.A., Maccio A.V., Stinson G.S., **Knebe A.**, *A mass-dependent density profile for dark matter haloes including the influence of galaxy formation*, MNRAS, 441, 2986
- [89] Brook C.B., Di Cintio A., **Knebe A.**, Gottloeber S., Hoffman Y., Yepes G., *The stellar-to-halo mass relation for Local Group galaxies*, ApJL, 784, L14
- [88] Carlesi E., **Knebe A.**, Lewis G.F.L., Yepes G., *Hydrodynamical simulations of coupled and uncoupled quintessence models II: galaxy clusters*, MNRAS, 439, 2958
- [87] Carlesi E., **Knebe A.**, Lewis G.F.L., Wales S., Yepes G., *Hydrodynamical simulations of coupled and uncoupled quintessence models I: large-scale structure and the cosmic web*, MNRAS, 439, 2943
- [86] Pujol A., Gaztanaga E., Giocoli C., **Knebe A.**, Pearce F.R., Skibba R.A., Ascasibar Y., Behroozi P., Elahi P., Han J., Lux H., Muldrew S.I., Neyrinck M., Onions J., Potter D., Tweed D., MNRAS, 438, 3205
Subhaloes gone Notts: the clustering properties of subhaloes, MNRAS, 438, 3205
- [85] Wojtak R., **Knebe A.**, Watson W., Iliev I., Hess S., Rapetti D., Yepes G., Gottloeber S., *Cosmic variance of the local Hubble flow in large-scale cosmological simulations*, MNRAS, 438, 1805
- [84] Watson W., Diego J.M., Gottloeber S., Iliev I., **Knebe A.**, Martinez-Gonzalez E., Yepes G., Barreiro R.B., Gonzalez-Nuevo J., Hotchkiss S., Marcos-Caballero A., Nadathur S., Viel P.,

- The Jubilee ISW Project I: simulated ISW and weak lensing maps and initial power spectra results*, MNRAS, 438, 412
- [83] Watson W., Iliev I., Diego J.M., Gottloeber S., **Knebe A.**, Martinez-Gonzalez E., Yepes G.,
Statistics of extreme objects in the Jubilee simulation, MNRAS, 437, 3776
- [82] Di Cintio A., Brook C.B., Maccio A.V., Stinson G.S., **Knebe A.**, Dutton A.A., Wadsley J.,
The dependence of dark matter profiles on the stellar to halo mass ratio: a prediction for cusps vs cores, MNRAS, 437, 415
- 2013**
- [81] Ocvirk P., Aubert D., Chardin J., **Knebe A.**, Libeskind N., Gottloeber S., Yepes G., Hoffman Y.,
Simulations of the reionization of an isolated Milky Way-M31 galaxy pair, ApJ, 777, 51
- [80] Hellwing W., Knollmann S., **Knebe A.**, Juszkiewicz R.,
Dark matter haloes as probes of modified gravity, JCAP10(2013)012
- [79] Srisawat C., **Knebe A.**, Pearce F.R., Schneider A., Thomas P.A., Behroozi P., Dolag K., Elahi P.J., Han J., Helly J., Jing Y., Jung I., Lee J., Mao Y.-Y., Onions J., Rodriguez-Gomez V., Tweed D., Yi S.K.,
Sussing Merger Trees: The Merger Trees Comparison Project, MNRAS, 436, 150
- [78] **Knebe A.**, et al. (34 co-authors),
Structure Finding in Cosmological Simulations: The State of Affairs, MNRAS, 435, 1618
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- [1] **Knebe A.**, *Lösungen der Dirac-Gleichung für semi-empirische Zentralfelder*, diploma thesis (MSc), Kiel, Germany

CONFERENCES & TALKS

colloquia

- 12/2013** “Constrained Local Universe Simulations”, **Barcelona, Spain**
- 03/2013** “Constrained Local Universe Simulations”, **Perth, Australia**
- 03/2013** “Constrained Local Universe Simulations”, **Sydney, Australia**
- 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**

conferences

Talks

- 03/2017** “Mocking Astrophysics”,
Mock Perth: Challenges for Simulations in the Era of Surveys, **Perth, Australia**
- 11/2015** “nIFTy Cosmology”,
Euclid CSWG meeting, **Barcelona, Spain**
- 06/2014** “Halo Finders & Tree Makers”,
Semianalytic models and hydrodynamic simulations, **Marseille, France**
- 11/2013** “The response of dark matter haloes to baryonic physics”,
9th MultiDark workshop, **Alcala de Henares, Spain**
- 09/2013** “Structure Finding in Cosmological Simulations: The State-of-Affairs”,
Exascale Computing in Astrophysics, **Ascona, Switzerland**
- 07/2013** “MergerTree: a tool for constructing merger trees in cosmological simulations”,
Sussing Merger Trees workshop, **Midhurst, UK**
- 04/2013** “The Halo-Finder Comparison Project”,
8th MultiDark workshop, **Granada, Spain**
- 03/2013** “Structure Finding in Cosmological Simulations”,
Synthetic Universes for Future Surveys, **Perth, Australia**
- 11/2012** “MultiDark CLUES”,
7th MultiDark workshop, **Barcelona, Spain**
- 07/2012** “The state of affairs of halo finding”,
Joint Euclid CSWG-OUSIM meeting, **Barcelona, Spain**
- 05/2012** “AHF: the AMIGA Halo Finder”,
Subhaloes going Notts workshop, **Dovedale, UK**
- 04/2012** “Haloes going MAD”,
MPA-IFT Spring Workshop, **Miraflores de la Sierra, Spain**
- 06/2010** “Luminosities of Backsplash Galaxies”,
CLUES meeting, **Madrid, Spain**
- 05/2010** “Haloes going MAD – Why? What? And How?”,
Haloes going MAD workshop, **Madrid, Spain** (organizer)
- 09/2008** “The correlation between spin parameter and halo mass”,
JENAM 2008, **Vienna, Austria** (co-organizer)
- 07/2008** “Dark Matter Haloes in Cosmological Simulations”,
Frontiers in Computational Astrophysics, **Ascona, Switzerland**
- 08/2007** “Dark Matter in Galaxies: A Defense of Λ CDM”,
Dynamics of Galaxies, **St. Petersburg, Russia**
- 04/2006** “The Dynamics of Satellite Galaxies”,
Galaxies in the Cosmic Web, **NMSU, Las Cruces, USA**
- 07/2005** “Galactic Haloes in MONDian Cosmology”,
Mass Profiles and Shapes of Cosmological Structures, **IAP Paris, France**
- 04/2004** “Newtonian N-body Dynamics”,
Gravity 2004, **Sydney University, Australia**
- 07/2003** “Galaxy Threshing”,
Galactic Chemodynamics, **Swinburne University, Australia**
- 06/2003** “Galaxy Threshing”,
The Local Group as a Cosmological Training Sample, **Potsdam, Germany**
- 01/2003** “Virtual Observatory: extension to theory”,
Observing the Theoretical Universe, **Sydney, Australia**
- 07/2002** “Non-Standard Structure Formation Scenarios”,

- 36th annual meeting of the Australian Society of Astrophysics, **Australia**
- 07/2002** “Satellite Galaxies in Non-Standard Cosmologies”,
Galaxy Evolution: From Approaches to Models, **Kiel, Germany**
- 02/2002** “Cosmological N-body Simulations”,
Theoretical Astrophysics in Australia, **Monash University, Australia**
- 09/2001** “MLAPM—a new C code for Cosmological Simulations”,
Hydrodynamical Simulations of Galaxy Assembly, **Madrid, Spain** (co-organizer)
- 08/1998** “Formation and Virialisation of Galaxy Clusters”,
New Trends in Astrophysics & Cosmology, **Bad Honnef, Germany**
- 06/1998** “Formation of Groups & Clusters of Galaxies”,
From Stars to Galaxies to the Universe, **Ringberg Castle, Germany**

Poster

- 04/2002** “Top-Down Fragmentation of WDM Filaments”,
Galaxy Evolution: Theory & Observations, **Cozumel, Mexico**
- 08/2000** “MLAPM – a new C code for Cosmological Simulation”,
Computational Cosmology, **University of Victoria, Canada**
- 07/1997** “Galaxy Clusters in Cosmological Simulations”,
Large Scale Structure: Tracks & Traces, **Potsdam, Germany**

outreach

2013-2017 annual presentation of the Department of Theoretical Physics @ UAM
to high-school (twice a year) and first year physics students (once a year)

- 07/2012** “La historia del Universo”, **Astronomia en al Siglo XXI, Madrid**
- 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**

TEACHING EXPERIENCE[§]

classroom lecturing

- since 2009 **Universidad Autonoma de Madrid**
- *Cosmology & The Early Universe* (MSc level)
 - WS 2015/16: 18h
 - SS 2009: 5 x 2h = 10h
 - *Gravitational Lensing* (MSc level)
 - SS 2016: 4 x 2h = 8h
 - SS 2015: 4 x 2h = 8h
 - SS 2014: 4 x 2h = 8h
 - SS 2013: 5 x 2h = 10h
 - WS 2009/10: 5 x 2h = 10h
 - *Computational Astrophysics* (MSc level)
 - SS 2016: 14 x 2h = 28h
 - WS 2013/14: 14 x 2h = 28h
 - WS 2012/13: 13 x 2h = 26h
 - WS 2011/12: 8 x 2h = 16h
 - WS 2010/11: 6 x 2h = 12h
- June 2010 **Vienna University**
- *Cosmology* (MSc level)
 - June 2010: 8 x 2h = 16h
- 2005 – 2008 **Potsdam University**
- *Astronomy & Astrophysics I* (BSc level)
 - WS 2005/06: 8 x 2h = 16h
 - *Cosmology & The Early Universe* (MSc level)
 - SS 2007: 2 x 2h = 4h
 - SS 2005: 6 x 2h = 12h
 - *Computational Cosmology* (MSc level)
 - WS 2007/08: 15 x 2h = 30h
 - WS 2005/06: 15 x 2h = 30h

classroom total of 290h

lab courses

- since 2009 **Universidad Autonoma de Madrid**
- *Computational Physics* (BSc level)
 - every academic year since 2009/10: 7x 30 x 2h = 420h
- 2007 – 2008 **Potsdam University**
- *Computational Cosmology* (MSc level)
 - WS 2008/09: *Semi-Analytical Galaxy Formation* (total of 90h)
 - SS 2007: *The starting redshift for simulations* (total of 90h)

lab total of 600h

[§] 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.

| | | |
|-------------------|--|---|
| 11/2016 – present | Robert Mostoghiu <ul style="list-style-type: none">• <i>Crystal Clear Clusters</i> | UAM results (so far): paper in prep. |
| 01/2015 – present | Doris Stoppacher <ul style="list-style-type: none">• <i>Galaxy Surveys vs. Simulations</i> | UAM results (so far): paper in prep. |
| 10/2012 – 09/2016 | Santiago Avila Peres <ul style="list-style-type: none">• <i>The accelerating Universe – Myth or Truth?</i> | UAM results: 3 refereed paper |
| 08/2010 – 07/2014 | Arianna Di Cintio <ul style="list-style-type: none">• <i>Constrained Simulations of the Local Group</i> | UAM results: 5 refereed paper |
| 11/2010 – 05/2014 | Edoardo Carlesi <ul style="list-style-type: none">• <i>Structure Formation in Models with coupled Dark Matter-Dark Energy</i> | UAM results: 4 refereed paper |
| 11/2006 – 12/2009 | Claudio Llinares <ul style="list-style-type: none">• <i>Simulations of the Universe using Modified Newtonian Dynamics</i> | AIP results: 4 refereed paper |
| 06/2005 – 06/2009 | Kristin Riebe (ne. Warnick) <ul style="list-style-type: none">• <i>Satellite galaxies in cosmological dark matter haloes</i> | AIP results: 3 refereed paper |
| 01/2006 – 04/2009 | Steffen Knollmann <ul style="list-style-type: none">• <i>AMIGA: Adaptive Mesh Investigations of Galaxy Assembly</i> | AIP results: 4 refereed paper |
| 01/2002 – 06/2005 | Stuart Gill <ul style="list-style-type: none">• <i>Satellite Galaxies in Cosmological Dark Matter Halos</i> | Swinburne University results: 6 refereed papers |

M.Sc./Diploma

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|-------------------|---|---|
| 11/2016 – 09/2017 | Jose Ortuno <ul style="list-style-type: none">• <i>Crystal Clear Clusters</i> | UAM results: paper in prep. |
| 11/2015 – 09/2016 | Alejandro Guerrero <ul style="list-style-type: none">• <i>Simulations of Planet Formation</i> | UAM results: paper in prep. |
| 11/2014 – 07/2015 | Jose Luis Bernal <ul style="list-style-type: none">• <i>Separating cosmic expansion from growth</i> | UAM results: 1 refereed paper |
| 11/2013 – 10/2014 | Juan Biel <ul style="list-style-type: none">• <i>Merger Rates in Cosmological Simulations</i> | UAM results: MSc thesis |
| 11/2013 – 10/2014 | Fernando Campos <ul style="list-style-type: none">• <i>AHF-2</i> | UAM results: software tool |
| 01/2012 – 09/2012 | Pedro Alonso Pilicio <ul style="list-style-type: none">• <i>Lentes Gravitacionales</i> | UAM results: software tool |
| 04/2008 – 04/2009 | Timur Doumler <ul style="list-style-type: none">• <i>Cosmological Magneto-Hydrodynamics</i> | AIP results: 1 refereed paper |
| 02/2006 – 07/2007 | Bastian Arnold <ul style="list-style-type: none">• <i>Satellite galaxies in Warm Dark Matter Cosmologies</i> | AIP 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