

Prof. Dr. Alexander Knebe

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

CURRICULUM VITAE

summary

Degrees:

01/2023	Accreditation as Professor “Catedrático”	ANECA ¹ , Spain
07/2011	Accreditation as Professor “Titular”	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 12/2020	Professor	UAM, Spain
since 05/2018	Adjunct Professor	University of Western Australia, Australia
03/2014 – 11/2020	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: (as obtained from ADS)

- 188 peer-reviewed publications (of which 32 are 1st author), 3 papers submitted
- >9000 citations
- h-index 50

Presentations:

- 31 invited colloquia talks
- 32 oral presentations at international meetings (incl. several invited reviews)

Teaching:

- several full courses both at BSc and MSc level (totalling to more than 1600h)
- coordination of [Astrophysics speciality](#) of MSc in Theoretical Physics at UAM

Supervision:

- 10 PhD students (+2 on-going), 14 MSc students (+1 on-going)

Competitive Grants:

- Principal Investigator of grants amounting to EUR 1.5 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, MINECO, ANPCYT)

¹ Agencia Nacional de Evaluación de la Calidad y Acreditación <http://www.aneca.es>

professional experience

- since 11/2020 **Professor** *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): **42 refereed paper, 3 submitted**
- since 05/2018 **Adjunct Professor** *University of Western Australia, Perth*
- 03/2014 – 11/2020 **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: **56 refereed paper**
- 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**

education

- 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** *Chr.-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)

qualifications in the Spanish system

- 01/2013 **Accreditation as 'Professor Catedratico'** *ANECA, Spain*
- 09/2020 **Accreditation as Professor '[Docencia Ingles](#)'** *UAM, Spain*
▪ incl. taking a 3ECTS course 'English as a Medium of Instructions'
- 07/2011 **Accreditation as 'Professor Titular'** *ANECA, Spain*
- 4 **Sexenios** (last one granted Sept 2020), *ANECA, Spain*
2 **Quinquenios** (last one granted April 2020), *UAM, Spain*
2 **DOCENTIA** (2012-2015, 2015-2018), *UAM, Spain*

professional activities and services

referee for...

- national funding agencies:
 - MINECO (Ministerio de Economía y Competitividad, Spain)
 - DFG (Deutsche Forschungs-Gemeinschaft/German Science Foundation, Germany)
 - Swiss National Science Foundation (Switzerland)
 - Agencia Nacional de Promoción Científica y Tecnología (Argentina)
 - Luxembourg Research Foundation (Luxembourg)
- international journals:
 - MNRAS, ApJ, PASA, A&A, Ap&SS
- external examiner for postdoc applications and professorships

committee work

- Science Committee:
 - since 2018: steering committee of international [The Three Hundred](#) collaboration
 - since 2018: steering committee of international [CLUES](#) collaboration
 - since 2012: member/chair of *MSc Tribunal*, UAM, Spain
 - since 2010: PI of international [Mocking Astrophysics](#) program
 - since 2010: member of Euclid: coordinator of work packages
 - Halo Finding & Merger Tree Construction
 - Mock Galaxy Validationwithin the *Cosmological Simulations Working Group*
- PhD committee:
 - 2024: Rosa Merida, UAM
 - 2024: Daniel de Andres, UAM
 - 2023: Walter Riquelme, UAM
 - 2022: Judit Perez, UAM
 - 2022: William Oliver, Sydney University
 - 2021: Manuel Trashorras, UAM
 - 2018: Isabel Santos, UAM
 - 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
 - + external examiner for PhD theses (France, Australia, Germany, UK)

- Time Allocation Committee:
 - since 2015: Barcelona Supercomputing Centre (Spain)
 - 2013/2014: DiRAC Resource Allocation Committee (UK)
 - 2008/2009: SHARCNET High-Performance Computing Consortium (Canada)
 - 2008/2009: AIP partner nights at the Large-Binocular Telescope (Germany)
- Science Advisory Committee:
 - 2004-2009: (spokesman of) internal science advisory committee at AIP

workshop organisation (SOC)

- 07/2024: workshop [The Three Hundred](#), La Cristalera, Madrid, Spain (chair)
- 07/2022: workshop [The Three Hundred](#), La Cristalera, Madrid, Spain (chair)
- 07/2022: workshop [CLUES](#), La Cristalera, Madrid, Spain (chair)
- 07/2021: workshop [The Three Hundred](#), virtual meeting via Zoom (chair)
- 07/2020: workshop [The Three Hundred](#), virtual meeting via Zoom (chair)
- 06/2018: workshop [Glenfiddling Galaxy Clusters](#), Edinburgh, UK
- 09/2017: conference [Fundamental Cosmology](#), Teruel, Spain
- 06/2017: workshop [Crystal Clear Clusters](#), La Cristalera, 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 [nIFTy 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 outgoing and incoming Erasmus students at UAM
- since 2015: coordinator of MSc in Theoretical Physics (astrophysics part) at UAM
- since 2011: (co-)organizer of colloquia at UAM
- since 2001: organisation of astro-ph clubs
- 2013-2016: outreach coordinator at UAM
- 2005-2009: (co-)organizer of in-house colloquia at AIP

awards

- since 2018: Adjunct Professor, University of Western Australia, Australia
- 2005-08: Adjunct Research Fellow, Swinburne University, Australia

competitive grants and awards

principal investigator:

- 09/2022 **Research Grant** *MICINN, Spain*
▪ Numerical Investigations of Galaxies and their distribution across the Universe: A multi-scale view from dwarfs to clusters to the cosmic web
grant volume: **EUR 240.000**
- 01/2019 **Research Grant** *MICIU, Spain*
▪ Multiscale Cosmological Simulations of Galaxy Formation and Large Scale Structures in the Universe
grant volume: **EUR 230.000**
- 06/2017 **workshop funding** *LACEGAL (EU funding)*
▪ “[Crystal Clear Clusters](#)”
grant volume: **EUR 10.000**
- 01/2016 **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](#)”
grant volume: **EUR 30.000**
- 05/2010 **workshop funding** *ASTROSIM (EU funding)*
▪ “[Haloes going MAD](#)”
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 **Research Grant** *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:

Research Grants:

01/2017-12/2020	<i>"LACEGAL: LatinAmericanChineseEuropean Galaxy FormationNetwork"</i> PI: Carlton Baugh, H2020-RISE (EU),	EUR 1.350.000
01/2014-12/2017	<i>"Elusives" Initial Training Network</i> PI: Belen Gavela, H2020-ITN (EU, No 674896),	EUR 3.800.000
01/2014-12/2017	<i>"INVISIBLESplus"</i> PI: Belen Gavela, H2020-RISE (EU, No 690575),	EUR 2.000.000
01/2014-12/2017	<i>"Orbits and Interactions of Satellites: a fundamental test of cosmology"</i> PI: Chris Power, ARC (Australia, DP140100198),	AUD 360.000
01/2013-12/2016	<i>"Observing the synthetic universe: revealing the dark cosmos"</i> PI: Geraint Lewis, ARC (Australia, DP130100117),	AUD 390.000
01/2013-12/2016	<i>"The MareNostrum Numerical Cosmology Project II"</i> PI: Gustavo Yepes, MINECO (Spain, AYA2012-31101),	EUR 90.000
12/2011-12/2015	<i>"INVISIBLES" Initial Training Network"</i> PI: Belen Gavela, FP7-PEOPLE (EU, No 289442),	EUR 4.000.000
12/2009-12/2014	<i>"MultiDark: Multimessenger Approach for Dark Matter Detection"</i> PI: Caros Munoz, MINECO (Spain, CSD2009-00064),	EUR .200.000
10/2009-09/2013	<i>"Astrofisica y Desarrollos tecnologicos en la Comunidad de Madrid"</i> PI: Miguel Mas, Comunidad Madrid (Spain),	EUR 900.000
01/2010-12/2012	<i>"The MareNostrum Numerical Cosmology Project"</i> PI: Gustavo Yepes, MICINN (Spain, AYA2009-13875-C03-02),	EUR 370.000
01/2010-12/2012	<i>"Formación y Evolución de Galaxias en un Contexto Cosmológico desde las Simulaciones Numéricas"</i> PI: Rosa Dominguez, MICINN (Spain, AYA2009-12792-C03-03),	EUR 240.000

Workshop Funds:

07/2013	<i>"Sussing Merger Tree"</i> (COSMOCOMP, EU)	EUR 20.000
05/2012	<i>"Subhaloes going Notts"</i> (COSMOCOMP, EU)	EUR 20.000

Supercomputing Times:

10/2017-10/2018	<i>“UNITSIM” project</i> (PRACE, EU)	25 mio. CPU hours
05/2016-12/2017	<i>“Down to the Dwarfs”</i> (PRACE, EU)	25 mio. CPU hours
11/2012-10/2013	<i>“Our Neighbourhood in the Universe: from first stars to present day”</i> (PRACE, EU)	26 mio. CPU hours
05/2011-04/2012	<i>“Large-scale simulations of galaxies in the high-z universe: probing the epoch of reionization”</i> (PRACE, EU)	5 mio. CPU hours
08/2011-12/2011	<i>“GALACTICA: GALaxies interACTing In a Cosmological hAbitat”</i> (BSC, Spain)	0.8 mio. CPU hours
01/2008-12/2017	<i>“Galaxy formation at different epochs and in different environments”</i> (PRACE, EU)	25 mio. CPU hours

Travel Grants:

05/2024-07/2024	"Research Stays for University Academics and Scientists", funds for 3-month mini-sabbatical at AIP, Germany (declined)	grant volume (DAAD, Germany): EUR 10.000
05/2012-08/2012	Arianna Di Cintio's 3-months visit at the AIP working with Stefan Gottloeber and Noam Libeskind	grant volume (UAM, Spain): EUR 1.800
03/2012-06/2012	Edoardo Carlesi's 3-months visit at the University of Sydney working with Geraint Lewis	grant volume (UAM, Spain): EUR 2.400
05/2009-09/2009	Timur Doumler's 4-months visit at Universidad Autonoma de Madrid to work on the development of AHF	grant volume (ASTROSIM, EU): EUR 2.000
06/2008-07/2008	Claudio Llinares' 2-months visit at St. Andrew's University to work on galactic dynamics under MOND	grant volume (HPC-Europa, EU): EUR 1.300
08/2007-11/2007	Claudio Llinares 3-months visit at St. Andrew's University to work on MONDian cosmological simulations	grant volume (HPC-Europa, EU): EUR 2.000
01/2007-03/2007	Steffen Knollmann's 3-months visit at Edinburgh University to work on MPI-parallelisation	grant volume (HPC-Europa, EU): EUR 2.000

PUBLICATIONS

refereed journals

submitted

- [191] Martin G., Pearce F.R., Hatch N., Contreras-Santos A., **Knebe A.**, Cui W.,
Stellar stripping efficiencies of satellites in numerical simulations: the effect of resolution, satellite properties and numerical disruption, MNRAS
- [190] Stoppacher D., Montero-Dorta A., Artale M., **Knebe A.**, Padilla N., Benson A., Behrens C.,
A semi-analytical perspective on massive red galaxies: I. Assembly history, environment & redshift evolution, A&A
- [189] Adame A., et al. (+9 co-authors)
PNG-UNITsims: the response of halo clustering to Primordial Non-Gaussianities as a function of mass, A&A

2024

- [188] Nuza S., Hoeft M., Contreras-Santos A., **Knebe A.**, Yepes G.,
The Three Hundred project: radio luminosity evolution from merger-induced shock fronts in simulated galaxy clusters, A&A
- [187] Euclid Collaboration, Mellier et al.,
Euclid. I. Overview of the Euclid mission, A&A
- [186] Contreras-Santos A., Buitrago F., **Knebe A.**, Rasia E., Pearce F., Cui W., Power C., Winstanley J.,
The Three Hundred: on the existence of (nearly) dark matter free massive satellite galaxies, A&A, in press
- [185] Haggard R., et al. (+12 co-authors),
Reconsidering the dynamical states of galaxy clusters using PCA and UMAP, MNRAS
- [184] Olex E. **Knebe A.**, Libeskind N., Makarov D., Gottloeber S.,
HINORA: a method for detecting ring-like structures in 3D point distributions and its application to the LVG catalogue, PASA, in press
- [183] Srivastava, A., et al. (+9 co-authors),
The Three Hundred: $M_{sub} - V_{circ}$ relation, MNRAS, in press
- [182] Contreras-Santos A., et al. (+8 co-authors)
Characterising the Intra-Cluster Light in The Three Hundred simulations, A&A
- [181] Reyes-Peraza G., Avila S., Gonzalez-Perez V., Lopez-Cano D., Ramakrishnan S., **Knebe A.**, Yepes G.,
An improved HOD prescription for Ha ELGs from UNITsim-Galaxies: conformity and modified NFW, MNRAS
- [180] Favole, G., et al. (+14 co-authors),
Characterizing the ELG luminosity functions in the nearby Universe, A&A
- [179] Cornwell D., Kuchner U., Gray M.E., Aragon-Salamanca A., Pearce F.R., Cui W., **Knebe A.**,
The localization of galaxy groups in close proximity to galaxy clusters using cosmic web nodes, MNRAS, 527, 23
- [178] Giocoli C., et al. (14 co-authors)
Evaluating the weak lensing cluster mass biases using the Three Hundred Project hydrodynamical simulations, A&A, 681, 67
- [177] Rost, A., et al. (+10 co-authors),
The three hundred project: thermodynamical properties, shocks and gas dynamics in simulated galaxy cluster filaments and their surroundings, MNRAS, 527, 1301

2023

- [176] Meneghetti M., et al. (+20 co-authors),
A persistent excess of galaxy-galaxy strong lensing observed in galaxy clusters, *A&A Letters*, 678, L2
- [175] Cornwell D., Aragon-Salamanca A., Kuchner U., Gray M., Pearce F., **Knebe A.**,
The probability of identifying the cosmic web environment of galaxies around clusters motivated by the Weave Wide Field Cluster Survey, *MNRAS*, 524, 2148
- [174] Li, Q., et al. (+9 co-authors),
The Three Hundred: the evolution of physical baryon profiles, *MNRAS*, 523, 1228
- [173] Contreras-Santos A., **Knebe A.**, Cui W., Hagggar R., Pearce F., Gray M., De Petris M., Yepes G.,
Galaxy pairs in The Three Hundred simulations II: studying bound ones and identifying them via machine learning, *MNRAS*, 522, 1270
- [172] Newton O., Di Cintio A., Cardona-Barrero S., Libeskind N., Hoffman Y., **Knebe A.**, Sorce J., Steinmetz M., Tempel E.,
The undiscovered ultra-diffuse galaxies of the Local Group, *ApJL*, 956, L37
- [171] Khoperskov S., et al. (+12 co-authors),
The stellar halo in Local Group Hestia simulations III. Chemical abundance relations for accreted and in-situ stars, *A&A*, 677, 91
- [170] Khoperskov S., et al. (+13 co-authors),
The stellar halo in Local Group Hestia simulations II. The accreted component, *A&A*, 677, 90
- [169] Khoperskov S., et al. (+13 co-authors),
The stellar halo in Local Group Hestia simulations I. The in-situ component and the effect of mergers, *A&A*, 677, 89
- [168] Gianfagna G., Rasia E., Cui W., de Petris M., Yepes G., Contreras-Santos A., **Knebe A.**,
A study of the hydrostatic mass bias dependence and evolution within The Three Hundred clusters, *MNRAS*, 518, 4238
- [167] Hough T., et al. (+12 co-authors),
The Three Hundred project: connection between star formation quenching and dynamical evolution in and around galaxy clusters, *MNRAS*, 518, 2398
- [166] Hagggar R., Kuchner U., Gray M., Pearce F., **Knebe A.**, Yepes G., Cui W.,
The Three Hundred project: Galaxy groups do not survive cluster infall, *MNRAS*, 518, 1316

2022

- [165] Dupuy A., et al. (+11 co-authors),
Anisotropic satellite accretion onto the Local Group with HESTIA, *MNRAS*, 516, 4576
- [164] Contreras-Santos A., **Knebe A.**, Cui W., Hagggar R., Pearce F., Gray M., De Petris M., Yepes G.,
Galaxy pairs in The Three Hundred simulations: a study on the performance of observational pair-finding techniques, *MNRAS*, 515, 5375
- [163] Wang Y., et al. (+9 co-authors),
A stochastic model to reproduce the SFH of individual galaxy in hydrodynamic simulations, *MNRAS*, 515, 3249
- [162] Cui W., Dave R., **Knebe A.**, et al. (22 co-authors),
The Three Hundred project: The Gizmo-Simba runs, *MNRAS*, 514, 977
- [161] Newton O., Libeskind N.I., **Knebe A.**, Sanchez-Conde M.A., Sorce J., Pilipenko S., Steinmetz M., Pakmor R., Tempel E., Hoffman Y., Vogelsberger M.,
Hermeian Dark Matter Haloes of the Local Group, *MNRAS*, 514, 3612
- [160] Contreras-Santos A., **Knebe A.**, Pearce F., Hagggar R., Gray M., Cui W., Yepes G., De Petris M., De Luca F., Power C., Mostoghiu R., Nuza S., Hoefl M.,
The Three Hundred project: galaxy cluster mergers and their impact on the stellar component of brightest cluster galaxies, *MNRAS*, 511, 2897

- [159] **Knebe A.**, Lopez D., Avila S., Favole G., Stevens A.R.H., Gonzalez-Perez V., Reyes-Peraza G., Yepes G., Chuang C.-H., Kitaura F.
UNITSIM-Galaxies: data release and clustering of emission-line galaxies, MNRAS, 510, 5392
- [158] Kuchner U., Hagggar R., Aragon-Salamanca A., Pearce F.R., Gray M., Rost A., Cui W., **Knebe A.**, Yepes G.,
An inventory of galaxies in cosmic filaments feeding galaxy clusters: galaxy groups, backplash galaxies, and pristine galaxies, MNRAS, 510, 581
- [157] Avila S., Vos-Gines B., Cunnington S., Stevens A.R.H., Yepes G., **Knebe A.**, Chuang C.-H.,
HI intensity mapping correlation function from UNIT simulations: BAO and observationally induced anisotropy, MNRAS, 510, 292

2021

- [156] E. Baxter, S. Adhikari, J. Vega, W. Cui, C. Chang, B. Jain, **A. Knebe**,
Shocks in the Stacked Sunyaev-Zel'dovich Profiles of Clusters I: Analysis with the Three Hundred Simulations, MNRAS, 508, 1777
- [155] Di Cintio A., Mostoghiu R., **Knebe A.**, Navarro J.,
Pericentric passage-driven star formation in satellite galaxies and their hosts: CLUES from Local Group simulations, MNRAS, 506, 531
- [154] Mostoghiu R., **Knebe A.**, Pearce F.R., Power C., Lagos C.D.P., Cui W., Borgani S., Dolag K., Murante G., Yepes G.,
The Three Hundred Project: The stellar angular momentum evolution of cluster galaxies, A&A, 652, 10
- [153] F. De Luca F., M. de Petris, G. Yepes, W. Cui, **A. Knebe**, E. Rasia,
The Three Hundred Project: Dynamical state of galaxy clusters and morphology from multi-wavelength synthetic maps, MNRAS, 504, 5383
- [152] Sorce J., Dubois Y., Blaizot J., McGee S.L., Yepes G., **A. Knebe**,
A hydrodynamical CLONE of the Virgo cluster of galaxies to confirm observationally-driven formation scenarios, MNRAS, 504, 2998
- [151] Kuchner U., A. Aragón-Salamanca, A. Rost, F.R. Pearce, M.E. Gray, W. Cui, **A. Knebe**, E. Rasia, G. Yepes,
Cosmic filaments in galaxy cluster outskirts: quantifying approaches to finding filament in redshift space, MNRAS, 503, 2065
- [150] R. Hagggar, F.R. Pearce, M. Gray, **A. Knebe**, G. Yepes,
The Three Hundred Project: Substructure in hydrodynamical and dark matter simulations of galaxy groups around clusters, MNRAS, 502, 1191
- [149] Mostoghiu R., Arthur J., Pearce F., Gray M., **Knebe A.**, Cui W., Welker C., Cora S., Murante G., Dolag K., Yepes G.,
The Three Hundred Project: The gas disruption of infalling objects in cluster environments, MNRAS, 501, 5029
- [148] V. Capalbo, M. De Petris, F. De Luca, W. Cui, G. Yepes, **A. Knebe**, E. Rasia,
The Three Hundred Project: quest of clusters of galaxies morphology and dynamical state through Zernike polynomials, MNRAS, 503, 6155
- [147] A. Rost, U. Kuchner, C. Welker, F.R. Pearce, F. Stasyszyn, M. Gray, W. Cui, R. Dave, **A. Knebe**, G. Yepes, E. Rasia,
The Three Hundred Project: the structure and properties of cosmic filaments, MNRAS, 502, 714

2020

- [146] Libeskind N., Carlesi E., Grand R., Khalatyan A., **Knebe A.**, et al. (+17 co-authors),
The Hestia project: simulations of the Local Group, MNRAS, 498, 2968

- [145] Gonzalez-Perez V., Cui W., Contreras S., Baugh C.M., Comparat J., Griffin A.J., Helly J., **Knebe A.**, Lacey C., Norberg P.,
Do model emission line galaxies live in filaments at $z \sim 1$?, MNRAS, 498, 1852
- [144] Cui W., Qiao J., Dave R., **Knebe A.**, Peacock J.A., Yepes G.,
Protoclusters: a view from the MultiDark galaxies, MNRAS, 497, 5220
- [143] Favole G., Gonzalez-Perez V., Orsi A., Stoppacher D., Comparat J., Cora S., Vega-Martinez C., Stevens A., Maraston C., Croton D., **Knebe A.**, Benson A., Montero-Dorta A., Padilla N., Prada F., Tomas D.
[OII] emitters in MultiDark-Galaxies and DEEP2, MNRAS, 497, 5432
- [142] **Knebe A.**, Gamez-Marin M., Pearce F.R., Cui W., Hoffmann K., De Petris M., Power C., Haggard R., Mostoghiu R.,
The Three Hundred project: shapes and radial alignment of satellite, infalling, and backsplash galaxies, MNRAS, 495, 3002
- [141] Li Q., Cui W., Yang X., Rasia E., Dave R., De Petris M., **Knebe A.**, Peacock J.A., Pearce F.R., Yepes G.,
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conference proceedings & other publications

2018

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2016

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2015

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- [21] Arnold B., **Knebe A.**, Power C., Gibson B.K.,
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- [20] Llinares C., **Knebe A.**, Zhao H.-S.
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2010

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A correlation between spin parameter and dark matter halo mass, in EAS Publications
Series, Vol. 44, 2010, p.53
- [18] Arnold B., **Knebe A.**, Power C., Gibson B.K.
Dynamics of substructures in warm dark-matter cosmologies, in EAS Publications Series,
Vol. 44, 2010, p.49
- [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.**,
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2004

- [13] Gill S.P.D., **Knebe A.**, Gibson B.K.,
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- [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

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2001

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2000

- [6] Mueller V., **Knebe A.**,
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1999

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- [4] Müller V., **Knebe A.**,
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1998

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1995

[1] Knebe A.,

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CONFERENCES & TALKS

colloquia

- 02/2024** “Massive DM-deficient Galaxies”, **Perth, Australia**
- 02/2024** “Intra-Cluster Light in The300 simulations”, **Perth, Australia**
- 02/2020** “The Three Hundred Galaxy Clusters”, **Zurich, Switzerland**
- 03/2018** “Mocking Astrophysics”, **Perth, Australia**
- 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**

Talks

- 05/2023** “Ring-like structures in the Local Volume”,
annual CLUES meeting, Munich, Germany
- 07/2022** “The Council of Giants”,
annual CLUES meeting, La Cristalera, Madrid, Spain
- 11/2019** “The Three Hundred: Modelling Galaxy Clusters and their Environment”,
First Spanish Meeting on Galaxy Clusters, ESAC, Villafranca, Spain
- 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

- 11/2019** “A brief history of Cosmology”, **Agrupacion Astronomia de Madrid**
- 03/2018** “Life, the Universe and Everything”, general outreach talk, **UAM, Madrid**
- 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**

- MSc courses:
 - [Cosmology & The Early Universe:](#) 180h++
(2009/10 & every year since 2015/16)
 - [Gravitational Lensing:](#) 104h
(2009/10 to 2022/23)
 - [Computational Astrophysics:](#) 340h
(2010/11 to 2021/22)
 - [Radiative Processes in Astrophysics:](#) 48h
(every year since 2019/20)
- BSc courses:
 - [Computational Physics I \(lab course\):](#) 780h
(2009/10 to 2022/23)

June 2010 **Vienna University**

- *Cosmology (MSc course):* 16h
(guest professorship in June 2010)

2005 – 2008 **Potsdam University**

- MSc courses:
 - *Cosmology & The Early Universe:* 16h
(WS2005/06, WS2007/08)
 - *Computational Cosmology:* 60h
(WS2005/06, WS2007/08)
 - *Computational Cosmology (lab course):* 90h
(SS2007, WS2008/09)
- BSc courses:
 - *Astronomy & Astrophysics I:* 16h
(WS2006/06)

total of > 1600h

[§] all lecture notes 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.

11/2023 – present	Edward Olex <ul style="list-style-type: none">• <i>Constrained Local Universe Simulations</i>	UAM results (so far): ---
09/2021 – present	Matias Gamez Marin <ul style="list-style-type: none">• <i>Planes of Satellite Galaxies and the Cosmic Web</i>	UAM results (so far): 1 refereed paper
01/2020 – present	Ana Contreras de Santos <ul style="list-style-type: none">• <i>The Three Hundred Galaxy Clusters</i>	UAM results: 8 refereed paper
11/2016 – 11/2020	Robert Mostoghiu <ul style="list-style-type: none">• <i>Crystal Clear Clusters</i>	UAM results: 8 refereed papers
01/2015 – 12/2019	Doris Stoppacher <ul style="list-style-type: none">• <i>Galaxy Surveys vs. Semi-Analytical Galaxy Catalogues</i>	UAM results: 3 refereed paper
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

09/2024 – 09/2025	Marta Valentuena <ul style="list-style-type: none">• <i>The300 galaxy clusters</i>	UAM results: MSc thesis
09/2023 – 09/2024	Victor de la Mora <ul style="list-style-type: none">• <i>Backsplash Galaxies</i>	UAM results: MSc thesis
09/2023 – 09/2024	Tomas Riera <ul style="list-style-type: none">• <i>Halo spin in WDM</i>	UAM results: MSc thesis
09/2022 – 09/2023	Edward Olex <ul style="list-style-type: none">• <i>The Council of Giants</i>	UAM results: paper submitted
11/2021 – 09/2022	Alejandro Cayrol <ul style="list-style-type: none">• <i>The Intra-Cluster Light in The300 clusters</i>	UAM results: MSc thesis
11/2019 – 09/2020	Daniel Lopez <ul style="list-style-type: none">• <i>UNITSIM emission-line galaxies</i>	UAM results: 1 refereed paper
11/2018 – 09/2019	Matias Gamez <ul style="list-style-type: none">• <i>“The Three Hundred” galaxy clusters</i>	UAM results: 1 refereed paper
11/2016 – 09/2017	Jose Ortuno <ul style="list-style-type: none">• <i>Crystal Clear Clusters</i>	UAM results: MSc thesis
11/2015 – 09/2016	Alejandro Guerrero <ul style="list-style-type: none">• <i>Simulations of Planet Formation</i>	UAM results: MSc thesis
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	UAM

- *Lentes Gravitacionales*

results: software tool

04/2008 – 04/2009

Timur Doumler

AIP

- *Cosmological Magneto-Hydrodynamics*

results: 1 refereed paper

02/2006 – 07/2007

Bastian Arnold

AIP

- *Satellite galaxies in Warm Dark Matter Cosmologies*

results: 1 refereed paper

Ph.D. (partial 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**
• *NEWtool: 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