

# BENEDIKT DIEMER

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## EDUCATION

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<b>PhD in Astronomy</b> University of Chicago (Advisor: Andrey Kravtsov) Thesis: On the (non-)universality of halo density profiles	2009 - 2015 <i>Chicago, IL</i>
<b>Master of Physics</b> University of Manchester (third year at UC Santa Barbara)	2004 - 2008 <i>Manchester, UK</i>

## RESEARCH EXPERIENCE

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<b>Harvard-Smithsonian Center for Astrophysics (CfA)</b> Institute for Theory and Computation (ITC) and NASA Einstein Fellow	Since 2015 <i>Cambridge, MA</i>
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## TEACHING & OUTREACH EXPERIENCE

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Co-founder of the arts and science collaboration <i>The Fabric of the Universe</i>	since 2014
Guest lecturer, UC Santa Cruz ASTR 214, <i>Special topics in galaxies and cosmology</i>	Fall 2017
Presenter of <i>Astronomy Conversations</i> (public outreach talks), Adler Planetarium	2011 - 2015
TA, UofC Physical Sciences 136, <i>Natural Hazards</i>	Winter 2012
TA, UofC Astronomy 241, <i>The physics of stars and stellar systems</i>	Fall 2009

## AWARDS & GRANTS

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NASA Einstein Fellowship	08/2018 - 07/2021
NSF AST grant, <i>Exploring the impact of cosmic ray feedback on galaxy evolution</i> (Co-investigator, PI M. Ruszkowski), total \$1.15 million	07/2017 - 06/2020
Nathan Sugarman Award for Excellence in Graduate Research, Enrico Fermi Institute	06/2015
Arts, Science & Culture Graduate Collaboration Grant, UChicago / SAIC	11/2014
Prize for best visualization, MindBytes poster competition, UChicago RCC	10/2014
Awarded ~ 1m CPU hours on the Midway Cluster, UChicago RCC	10/2013
McCormick Fellowship, UChicago	09/2009 - 06/2011
Platt Prize for Theoretical Physics, University of Manchester	07/2008
Scholarship from the German Academic Foundation (Studienstiftung)	09/2007 - 07/2008

## SKILLS & PROFESSIONAL SERVICES

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Programming Languages	Python, C/C++, MPI, MatLab, Mathematica, Perl, Java, PHP, SQL
Peer Reviewer	German (native), English (fluent), Portuguese (advanced)
Committee Service	ApJ, MNRAS, JCAP, Physics Letters B (10 articles in total)
	ITC Fellowship Selection Committee (2016, 2017, 2018)
	ITC Visitor Committee (2017/18, 2018/19)
	Reviewer for NASA Earth & Space Sciences Fellowship (2018)

## NON-ACADEMIC PROFESSIONAL EXPERIENCE

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<b>jambit GmbH</b> Software Architect	08/2008 - 07/2009 Munich, Germany
<b>Humana People to People</b> Voluntary Development Instructor	11/2002 - 12/2003 Durban, South Africa / Nacala, Mozambique

## SELECTED PUBLICATIONS

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Diemer & Joyce, <i>An accurate physical model for halo concentrations</i> , arXiv 1809.07326	2018
Diemer, <i>COLOSSUS: A python toolkit for cosmology, large-scale structure, and dark matter halos</i> , arXiv 1712.04512	2018
Diemer, Stevens, Forbes & 10 co-authors, <i>Modeling the atomic-to-molecular transition in cosmological simulations of galaxy formation</i> , <i>ApJS</i> 238, 33	2018
Diemer, Mansfield, Kravtsov & More, <i>The splashback radius of halos from particle dynamics: II. Dependence on mass, accretion rate, redshift, and cosmology</i> , <i>ApJ</i> 843, 140	2017
Diemer, <i>The splashback radius of halos from particle dynamics: I. The SPARTA algorithm</i> , <i>ApJS</i> 231, 5	2017
Diemer & Facio, <i>The Fabric of the Universe: Exploring the cosmic web in 3D prints and woven textiles</i> , <i>PASP</i> 129, 975	2017
Diemer, Sparre, Abramson & Torrey, <i>Log-normal star formation histories in simulated and observed galaxies</i> , <i>ApJ</i> 839, 26	2017
More et al., <i>Detection of the splashback radius of and halo assembly bias of massive galaxy clusters</i> , <i>ApJ</i> 825, 39	2016
More, Diemer & Kravtsov, <i>The splashback radius as a physical halo boundary and the growth of halo mass</i> , <i>ApJ</i> 810, 36	2015
Diemer & Kravtsov, <i>A universal model for halo concentrations</i> , <i>ApJ</i> 799, 108	2015
Diemer & Kravtsov, <i>Dependence of the outer density profiles of halos on their mass accretion rate</i> , <i>ApJ</i> 789, 1	2014
Diemer, Kessler, et al., <i>Comparing the light curves of simulated Type Ia Supernovae with observations using data-driven models</i> , <i>ApJ</i> 773, 119	2013
Diemer, More, & Kravtsov, <i>The pseudo-evolution of halo mass</i> , <i>ApJ</i> 766, 25	2013

## INVITED TALKS

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Galaxy Journal Club, STScI	09/21/2018
BCCP Cosmology Seminar, UC Berkeley	04/17/2018
Cosmology Seminar, Stanford University	04/16/2018
FLASH Seminar, UC Santa Cruz	11/09/2017
Colloquium, University of Michigan	10/12/2017
Theoretical Astrophysics Seminar, University of Zurich	07/14/2017
Colloquium, University Observatory Munich	07/05/2017
Astrophysics Seminar, Hebrew University	06/27/2017

A&A Seminar, Tel Aviv University	06/14/2017
TAPIR Seminar, CalTech	04/21/2017
Seminar, UC Riverside	04/19/2017
Group seminar, UCLA	04/17/2017
High-energy phenomena seminar, Harvard/CfA	04/05/2017
AstroLunch Seminar, Carnegie Mellon University	03/14/2017
Colloquium, ASIAA, Taipei	04/13/2016
APEC Seminar, Kavli IPMU, Tokyo	04/07/2016
YCAA Seminar, Yale University	10/20/2015
CIERA Seminar, Northwestern University	12/01/2014
Particle Astrophysics Seminar, Fermilab	11/10/2014
BCCP Cosmology Seminar, UC Berkeley	10/07/2014
KIPAC Cosmology Seminar, Stanford University	10/06/2014

## CONFERENCE TALKS

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8th KIAS workshop on cosmology and structure formation, Seoul (invited talk) <i>Caustics, orbits, splashback: New insights on halo dynamics and structure</i>	11/06/2018
Einstein Fellows Symposium, Harvard-Smithsonian CfA <i>The splashback radius of dark matter halos</i>	10/02/2018
Santa Cruz Galaxy Workshop, UCSC <i>Modeling the atomic-to-molecular transition in cosmological simulations of galaxy formation</i>	08/07/2018
Numerical Galaxy Formation Workshop, Schloss Ringberg, Germany <i>Adventures in modeling the HI/H<sub>2</sub> transition in cosmological simulations</i>	03/21/2018
Harvard-Heidelberg star formation workshop, Cambridge MA <i>Adventures in modeling molecular gas in cosmological simulations</i>	11/15/2017
KITP Conference on the galaxy-halo connection, UCSB (invited review talk) <i>Universality, history, and circumstance: On the structure and boundary of CDM halos</i>	05/16/2017
SnowPAC, Snowbird UT (invited talk) <i>The splashback radius as a physical halo boundary</i>	03/16/2016
SnowCluster, Snowbird UT <i>On the (non-)universality of cluster density profiles and concentrations</i>	03/16/2015
Future directions in galaxy cluster surveys, Paris <i>Dependence of the density profiles of halos on their mass accretion rate</i>	06/25/2014
Fifty-One Erg Conference, Raleigh NC <i>Comparing the light curves of simulated Type Ia Supernovae with observations</i>	05/13/2013
Santa Fe Cosmology Workshop, Santa Fe NM <i>The pseudo-evolution of halo mass</i>	07/12/2012
Great Lakes Cosmology Workshop, Chicago IL <i>Confronting simulations and observations of Type Ia Supernovae</i>	06/15/2010