Curriculum Vitae – Edoardo Carlesi

Personal information

Birth 23/09/1983, Pisa, Italy.
Citizenship Italian
Contact data ecarlesi@aip.de

Education

2014 Ph.D. (Cum Laude) in Theoretical Physics, Universidad Autonoma de Madrid (Spain)

2009 MSc (Cum Laude) in Theoretical Physics, Università degli Studi Roma Tre (Italy)

2005 BS (Cum Laude) in Physics, Università degli Studi Roma Tre (Italy)

Professional Experience

01/2018 → **Today** Postdoctoral fellow at the Astrophysikalisches Institut Potsdam (AIP), Potsdam, Germany

10/2014 – **10/2017** Postdoctoral fellow at the Racah Institute Of Physics, Hebrew University (HU), Jerusalem, Israel

11/2010 – **09/2014** Assistant Professor and Ph.D. student at the Universidad Autonoma de Madrid (UAM), Madrid, Spain

03/2012 – **06/2012** Visiting student at the Institute of Astronomy, School of Physics, University of Sydney, Sydney, Australia

05/2008 – **10/2009** Java developer, Sinologische Institut Heidelberg, Heidelberg, Germany

05/2008 – **11/2008** Visting student at the Heidelberg Institut für Theoretische Physik, Ruprecht Karls Universität Heidelberg, Heidelberg, Germany

Grants and Awards

06/2017 HPC grant to attend the HPC summer school in Boulder, Colorado (USA) ($\sim$ 2500\$)

10/2016 HU Golda Meir Fellowship ($\sim$ 20000 \$)

10/2015 HU Lady Davis Fellowship ($\sim$ 15000 \$)

04/2014 KASI Grant to join the CosKASI conference ($\sim$ 1000§)

09/2013 NSF Grant to join the PACIFIC 2013 Symposium ($\sim$ 1000§)

02/2012 UAM Travel Grant to visit the Institute of Astronomy, University of Sydney ($\sim$ 6000 §)

Talks

06/2018 Invited talk at the *CLUES Project* annual meeting, Puerto de la Cruz, Tenerife, Spain

06/2017 Invited talk at the *CLUES Project* annual meeting, Miraflores de la Sierra, Madrid, Spain

07/2016 Invited talk at the *Large Scale Structure and Galaxy Flows* conference, Quy Nohn, Vietnam

06/2016 Invited talk at the *CLUES Project* annual meeting, Technion, Haifa, Israel

04/2016 Invited talk at the *Near Field Cosmology* thinkshop, Innsbruck University Center, Obergurgl, Austria

05/2015 Invited talk at the *CLUES Project* annual meeting, DARK Cosmology Center, Copenhagen, Denmark

12/2014 Invited talk at the *The Quest for Dark Energy II - Workshop*, Ringberg Castle, Munich, Germany

08/2014 Invited talk at the *CLUES Project* annual meeting, AIP Potsdam, Germany

04/2014 Contributed talk at the *CosKASI 2014* conference, Daejeon, Republic of Korea

09/2013 Contributed talk at the *PACIFIC 2013* symposium, Moorea, French Polynesia

05/2013 Invited talk at the *Workshop on Cosmological Simulations: From galaxies to clusters to the large scale structures*, Miraflores de la Sierra (Madrid), Spain

06/2012 Invited talk at the *CLUES Project* annual meeting, Lyon, France

09/2011 Contributed talk at the *Observational Cosmology* summer school, University Of Azores, Portugal

06/2011 Invited talk at the *CLUES Project* annual meeting, Sussex University, Brighton, UK

05/2011 Invited talk at the *Nature of Dark Energy* workshop, UAM/IFT, Madrid, Spain

04/2011 Invited talk at the fourth *MultiDark* workshop, UAM/IFT, Madrid, Spain

Seminars

05/2017 *Racah Institute of Physics*, Hebrew University, Jerusalem, Israel

05/2016 *Astronomy Group*, Weizmann Institute, Rechovot, Israel

05/2016 *Astronomska Opservatorija u Beogradu*, Belgrade, Serbia

04/2016 *Instituto de Astrofísica de Canarias*, Tenerife, Spain

03/2016 *Astronomy Group*, Tel Aviv University, Tel Aviv, Israel

10/2015 *Dipartimento di Fisica*, Università La Sapienza, Roma, Italy

10/2014 *Racah Institute of Physics*, Hebrew University, Jerusalem, Israel

09/2014 *IPNL*, Université de Lyon 1, Lyon, France

05/2014 PhD thesis defence, *Departamento de Física Teórica*, UAM, Madrid

04/2014 *Astrophysikalisches Institut Potsdam*, Potsdam, Germany

Participation in Schools and Workshops

06/2017 HPC School in Boulder, Colorado, USA

03/2015 Statistical Inference for Astro and Particle Physics Workshop, Weizmann Institute, Rehovot, Israel

03/2013 Cosmological Tests of Gravity (EUCLID Workshop) in Oxford, UK

11/2012 Barcelona supercomputing center school on *Parallel computing*, Barcelona, Spain

11/2011 *MultiDark* workshop, Matalascañas, Huelva, Spain

07/2011 *Fronteras de la Computación* workshop in Benasque, Spain

07/2011 *ISAAP* summer school in Heidelberg, Germany

03/2010 *Fisher matrix forecasts and the iCosmo package*, IFIC, Valencia, Spain

01/2010 *MultiDark* workshop, UAM, Madrid, Spain

Participation in Research Projects

June 2013 – June 2015 *El Proyecto de Cosmología Numérica MareNostrum: Un Laboratorio Virtual Sobre la Evolución del Universo* MINECO (Spain) - AYA2012-31101

May 2011 – September 2014 *Multimessenger approach for Dark Matter Detection*, CSD2009-00064

March 2011 – June 2013 *El Proyecto de Cosmología Numérica MareNostrum: Un Laboratorio Virtual Sobre la Evolución del Universo*, AYA2009-13857-C03-02

IT Skills

OS Linux, Android, Windows

Programming languages Very good knowledge of C and C++, good knowledge of bash scripting, good knowledge of Java and Python, basic knowledge of Android Java/XML app development, basic of Fortran

Parallel APIs Good programming knowledge of MPI and OpenMP, basics of OpenACC and CUDA for GPU

Other languages/packages known IDL, TeX, HTML, gnuplot, OpenOffice, basics of Octave/Matlab

Software and Numerical Packages

METRO-C++ A scalable C++/MPI code for MergerTree calculation. Main developer

PyRCODIO A Python package (with external C dependencies for computational intensive operations) for analysis and post-processing of cosmological simulations. Main developer

P-MergerTree AHF MergerTree C-language tool ported to MPI. Main developer

Ginnungagap Initial Conditions generator for cosmological simulations. User.

IceCore Generator of constrained gaussian white noise fields for Initial Conditions. Written in C++, I designed and implemented an MPI parallel version of it.

AHF Halo Finder for cosmological simulations. Written in C, MPI/OpenMP parallel, I designed and implemented a version suited for non-standard dark energy models.

Gadget-2.0 Cosmological N-Body solver. Written in C, MPI parallel, I designed and implemented a version suited for non-standard and interacting dark energy models.

CMBEasy Boltzmann code for cosmological parameter estimation. Written in C++, MPI parallel, I designed an implemented a version suited for neutrino-interacting dark energy models.

Outreach

07/2018 General public talk *La Materia Oscura Spiegata ad Alberto Tomba* (Dark matter for dummies) at the *Milano Nerd* festival, Milan, Italy

05/2016 Presentation on *Torat Einstein vegalei hakvida* (Einstein Theory and Gravitational Waves) for the group *Esrim zot hatkhalah*, Ein Kerem, Jerusalem, Israel

12/2011 Interview for *The New Scientist* magazine, on the topic of dark energy and old massive galaxy clusters. *https://www.newscientist.com/article/dn21315-variable-dark-energy-could-explain-old-galaxy-clusters/*

Teaching Experience

09/2013 – 12/2013 TA, Laboratorio de Circuitos Electronicos (Laboratory of Electronics), Faculty of Engineering, UAM ... (60 h)

09/2012 – 12/2012 TA, Laboratorio de Circuitos Electronicos (Laboratory of Electronics), Faculty of Engineering, UAM ... (60 h)

11/2011 – 02/2012 TA, Laboratorio de Física para Biologos (Physics Laboratory for Biologists), UAM ... (20 h)

09/2011 – 12/2011 TA, Laboratorio de Circuitos Electronicos (Laboratory of Electronics), Faculty of Engineering, UAM ... (40 h)

04/2011 – 06/2011 TA, Laboratiorio de Física para Quimicos (Physics Laboratory for Chemists), UAM ... (24 h)

11/2010 – 02/2011 TA, Laboratiorio de Física para Biologos (Physics Laboratory for Biologists), UAM ... (36 h)

09/2006 – 02/2007 TA, Fisica 2 (General Physics 2), Department of Mathematics, Universitá degli Studi Roma 3 .... (40 h)

Languages

Italian Mother tongue

English Fluent

Spanish Fluent

Serbo-Croatian Fluent

German Conversational

French Conversational

Russian Conversational

Hebrew Conversational

Arabic (Levantine Dialect and MSA) Conversational

Portuguese Lower intermediate

Mandarin Chinese Beginner

Publications

13. Cosmic-Ray Anisotropy from Large Scale Structure and the effect of magnetic horizons.
N. Globus, T. Piran, Y. Hoffman, **E. Carlesi**, D. Pomaréde.
Submitted to MNRAS (2018)

12. The quasi-linear nearby Universe.
Y. Hoffman, **E. Carlesi**, D. Pomaréde, B. Tully, H. Courtois, S. Gottlöber, N. Libeskind, J. Sorce, G. Yepes.
Accepted for Publication in Nature Astronomy, August 2018.

11. The dynamics of the Local Group as a probe of Dark Energy and Modified Gravity.
E. Carlesi, D.F. Mota, H.A. Winther.
MNRAS 466, 4813, 2017

10. Constraining the mass of the Local Group.
E. Carlesi, Y. Hoffman, J. Sorce, S. Gottloeber.
MNRAS 465, 4886, 2017

9. The tangential velocity of M31: CLUES from constrained simulations.
E. Carlesi, Y. Hoffman, J. Sorce, S. Gottlöber, G. Yepes, H. Courtois, B. Tully.
MNRAS Letters, 460-1, 5, 2016

8. Constrained Local UniversE Simulations: A Local Group Factory.
E. Carlesi, J. Sorce, Y. Hoffman, S. Gottlöber, G. Yepes, N. Libeskind, S. Pilipenko, A. Knebe, H. Courtois, B. Tully, M. Steinmetz.
MNRAS 458, 900, 2016

7. Cosmicflows constrained local universe simulations.
J. Sorce, S. Gottloeber, M. Steinmetz, Y. Hoffman, B. Tully, H. Courtois, D. Pomarede, **E. Carlesi**.
MNRAS 455, 2078, 2016

6. Hidden from view: Coupled dark sector physics and small scales.
P. Elahi, G. F. Lewis, C. Power, **E. Carlesi**, A. Knebe.
MNRAS 452, 1341, 2015

5. On the observability of coupled dark energy with cosmic voids.
P. Sutter, **E. Carlesi**, A. Knebe, B. Wandelt.
MNRAS 446, 1, 2015

4. Hydrodynamical simulations of coupled and uncoupled Quintessence models - II. Galaxy clusters.
E. Carlesi, A. Knebe, G.F. Lewis, G. Yepes.
MNRAS 439, 2958, 2014

3. Hydrodynamical simulations of coupled and uncoupled Quintessence models - I. Halo properties and the cosmic web.
E. Carlesi, A. Knebe, G.F. Lewis, S. Wales, G. Yepes.
MNRAS 439, 2943, 2014

2. N-body simulations of a Vector Dark Energy model.
E. Carlesi, A. Knebe, G. Yepes, S. Gottlöber, A. Maroto, J. Beltran.
MNRAS 425, 669, 2012

1. High-z massive clusters and Vector Dark Energy.
E. Carlesi, A. Knebe, G. Yepes, S. Gottlöber, A. Maroto, J. Beltran.
MNRAS 418, 2715, 2011