

# CURRICULUM VITÆ – STEFANO PROFUMO (PI)

## Professional Preparation

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Università di Pisa, Pisa, Italy	Physics	B.Sc., 2001
Scuola Normale Superiore, Pisa, Italy	Theoretical Physics	M.Sc., 2001

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International School for Advanced Studies (SISSA-ISAS), Trieste, Italy	Elementary Particle Theory	Ph.D., 2004
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Florida State University	Theoretical Particle Physics	2004-2005
California Institute of Technology	Theoretical Astrophysics	2005-2007

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## Appointments

July 2015-present	Professor of Physics and Director of Graduate Studies, Department of Physics, University of California, Santa Cruz (UCSC)
July 2011-present	Deputy Director for Theory, Santa Cruz Institute for Particle Physics
July 2011-July 2015	Associate Professor of Physics, Department of Physics, UCSC
July 2007-June 2011	Assistant Professor of Physics, Department of Physics, UCSC

## Research Interests

- Astro-Particle Physics
  - Particle Dark Matter Searches and Model Building
  - High Energy Astrophysics
- Theoretical High Energy Physics
  - Particle Physics Beyond the Standard Model
  - Models for the Generation of the Matter-Antimatter Asymmetry in the Universe
  - Phenomenology of Supersymmetric and Extra-Dimensional Models

## Selected Awards

2013	UCSC Excellence in Teaching Award
2009	Outstanding Junior Investigator Award, Department of Energy, Office of High Energy Physics
2003	“Lando Caiani” National Prize for best Master’s Thesis on Field Theory
1996	“Ezio Garuzzo” National High School Prize in Philosophy

## Selected Grants

- 2013-17 Principal Investigator, DoE, “*Research in Particle Physics - Theory Task*” - PIs: Banks, Dine, Haber, Profumo (grant coordinator: Profumo), 4 years, \$ 1,645,000
- 2015-18 Co-Principal Investigator, NSF, “*Extremes Meet: Radio and Gamma-ray Observations of Clusters of Galaxies, from Dark Matter to Cosmic Rays*” - PI: Jeltama, 3 years, \$ 325,000
- 2014-16 Principal Investigator, UC/MEXUS, “*Observational Prospects to Constrain Dark Matter Particle Physics*”, \$60,000
- 2011 Principal Investigator, NASA Fermi Guest Investigator Program, “*Identifying the nature of the Galactic center gamma-ray source 1FGL J1745.6-2900*” (\$ 83,000)
- 2009 Principal Investigator, DoE, “*Theoretical Techniques and Computational Tools for the Identification of Particle Dark Matter and Baryogenesis*” (\$ 237,000)
- 2009 Principal Investigator, NASA Fermi-GLAST Guest Investigator Program, “*DMMW: a tool for multi-wavelength dark matter searches*” (\$ 85,000)
- 2008 Principal Investigator, NASA Fermi-GLAST Guest Investigator Program “*Fermi Observations of Nearby Radio Halo Clusters: Probing Cosmic Ray and Dark Matter Models with Multiwavelength Observations*” (\$ 65,000)

## Scholarly Work

- Book: “*An Introduction To Particle Dark Matter*”, 2016, World Scientific (graduate-level textbook)
- **138** peer-reviewed publications, of which 120 with less than 4 co-authors
- **9,472** citations (h-index **51**)
- More than 30 conference proceedings, white papers, book chapters, other scientific papers

## Selected Notable Publications

1. “**Dissecting cosmic-ray electron-positron data with Occam’s Razor: the role of known Pulsars**”  
S. Profumo.  
Central Eur. J. Phys. **10**, 1 (2011) [328 cites]
2. “**Dark matter and collider phenomenology of universal extra dimensions**”  
D. Hooper and S. Profumo.  
Phys. Rept. **453**, 29 (2007) [354 cites]
3. “**Direct, indirect and collider detection of neutralino dark matter in SUSY models with non-universal Higgs masses**”  
H. Baer, A. Mustafayev, S. Profumo, A. Belyaev and X. Tata.  
JHEP **0507**, 065 (2005) [226 cites]
4. “**What mass are the smallest protohalos?**”  
S. Profumo, K. Sigurdson and M. Kamionkowski.  
Phys. Rev. Lett. **97**, 031301 (2006) [193 cites]

5. **“Singlet Higgs phenomenology and the electroweak phase transition”**  
S. Profumo, M. J. Ramsey-Musolf and G. Shaughnessy.  
JHEP **0708**, 010 (2007) [184 cites]
6. **“Multi-frequency analysis of neutralino dark matter annihilations in the Coma cluster”**  
S. Colafrancesco, S. Profumo and P. Ullio.  
Astron. Astrophys. **455**, 21 (2006) [180 cites]
7. **“Neutralino cold dark matter in a one parameter extension of the minimal supergravity model”**  
H. Baer, A. Mustafayev, S. Profumo, A. Belyaev and X. Tata.  
Phys. Rev. D **71**, 095008 (2005) [149 cites]
8. **“TeV gamma-rays and the largest masses and annihilation cross sections of neutralino dark matter”**  
S. Profumo.  
Phys. Rev. D **72**, 103521 (2005) [144 cites]
9. **“Neutralino dark matter, b tau Yukawa unification and nonuniversal sfermion masses”**  
S. Profumo.  
Phys. Rev. D **68**, 015006 (2003) [104 cites]
10. **“Discovery of a 3.5 keV line in the Galactic Centre and a critical look at the origin of the line across astronomical targets”**  
T. E. Jeltema and S. Profumo.  
Mon. Not. Roy. Astron. Soc. **450**, no. 2, 2143 (2015) [95 cites]

## Professional Activities

- **Founding Editor**, “*Physics of the Dark Universe*” (Elsevier Journal); **Editor**, “*Scientific World Journal*” for Astronomy and of “*Dataset Papers in Physics*” for High Energy Physics; **Editorial Board**, “*Space Science and Astrophysics*”; **Guest Editor**, “*New Journal of Physics*”
- **Book Reviewer** for Imperial College Press and Pearson / Addison-Wesley
- **Referee** for *Physical Review Letters*, *Physical Review D*, *Physics Reports*, *Physics Letters B*, *Journal of High Energy Physics*, *Journal of Cosmology and Astroparticle Physics*, *Classical and Quantum Gravity*, *Astrophysical Journal*, *Astrophysical Journal Letters*, *Journal of Physics A*, *Journal of Physics G*, *Advances in Astronomy*, *PLoS* and *Nature*
- **Member**, *High Energy Physics Advisory Panel* (HEPAP), 2014-2017
- **Grant Proposal Reviewer** for *Department of Energy*, *National Science Foundation* and *NASA*
- **Grant Proposal Reviewer** for the science agencies of Australia, Austria, Canada, Chile, Denmark, Estonia, France, Japan, Kazakhstan, Netherlands, Norway, South Africa and Switzerland.
- **Invited representative** for the Astro-Particle Physics Community to the Working Group on Laboratory Astrophysics (WGLA) of the American Astronomical Society (2009-present)
- **Organizer**: Aspen Summer 2015 Workshop on Dark Matter; KITP 2014 Workshop on Baryogenesis; KITP 2013 Workshop on Dark Matter; Aspen Winter 2011 Workshop on Dark Matter and Aspen Summer 2011 Workshop on “*A Roadmap Towards Discovery*”

- **Invited Lecturer:** 2013 and 2016 pre-SUSY, 2012 TASI, 2013 International Institute of Physics (Brazil), 2016, III Jose Plinio Baptista School of Cosmology (Brazil), 2016 Galileo Galilei Institute (Italy)
- **Colloquium speaker** at an average of 10-12 US Institutions every year, **invited plenary speaker** at an average of 4-5 international conferences every year, several other speaking engagements, over the last few years
- **Executive Committee Member**, Kavli Summer Program in Astrophysics; **Advisory Committee Member**, U Mass Amherst Center for Fundamental Interactions

## Doctoral and Post-Doctoral Advisees

- **Doctoral students:** Lorenzo Ubaldi (PhD 2011, Postdoc at Tel Aviv University, Israel); John Kehayias (PhD 2011, Postdoc at Vanderbilt U); Jonathan Kozaczuk (PhD 2013, Postdoc at TRIUMF, Canada); Timothy Linden (PhD 2013, Postdoc at OSU); Carroll Wainwright (PhD 2013, Industry); Jonathan Cornell (PhD 2014, McGill U, Canada); Eric Carlson (PhD 2016, Industry).
- **Post-doctoral Advisees:** Iris Gebauer (2010-12, now staff at KIT, Germany); Patrick Draper (2011-14, now Faculty at U Mass, Amherst); William Shepherd (2012-14, now faculty at Nils Bohr Institute, Denmark); Farinaldo Quieroz (2012-14, now staff at MPI, Heidelberg, Germany); Alma Gonzalez (2013-15, now faculty at Guanajuato University, Mexico); Tim Stefaniak (2013-present); Francesco D'Eramo (2014-present).

## Selected Outreach and Service

**Director**, Graduate Studies, UC Santa Cruz Physics Department (2012-present)

**Chair**, UC Santa Cruz Senate Committee on Faculty Welfare (2016-present)

**Member**, UC Santa Cruz Graduate Council Senate Committee (2014-16)

**Mentor**, “Adopt a Physicist” (2008-present)

**Lecturer**, “SCIPP QuarkNet High School Program” (2011-present)

**Organizer**, Workshop on Graduate Fellowship Applications, UCSC Physics Department (2009-present)

**Organizer**, Workshop on the “Art of Scientific Presentation” UCSC Physics Department (2012-present)

**Head Coach**, UCSC Cross Country Running Club, **Faculty Liaison**, UCSC Cycling Team

## Courses Taught

- Introduction to Particle Physics (graduate, 2007, 2008)
- Mathematical Methods for Physics (upper-division undergraduate, 2008, 2009, 2010, 2011, 2012)
- Quantum Field Theory (graduate, 2009, 2010, 2014, 2015)
- General Relativity (graduate, 2010)
- Graduate Classical Mechanics (graduate, 2011, 2012, 2016)
- Mechanics (upper-division undergraduate, 2012, 2013)
- Introduction to Physics (lower-division undergraduate, 2013)
- Quantum Mechanics (graduate, 2015, 2016)