Fernando Becerra

Astrophysicist

Harvard-Smithsonian Center for Astrophysics, 60 Garden Street, Cambridge, MA, USA 02138

+1 (617) 495 8348 | fbecerra@cfa.harvard.edu | fbecerra.github.io | fbecerra | becerrafernando

Education

Harvard University, Ph.D. candidate in Astronomy & Astrophysics — *Aug 2012 - Present*

Thesis: Formation of Supermassive Black Hole Seeds, Advisor: Lars E. Hernquist.

Harvard University, A.M. in Astronomy & Astrophysics — *Aug 2012 - May 2014*

Universidad de Chile, M.Sc. in Astronomy, with Highest Honors — *Mar 2010 - Aug 2012*

Thesis: A Study of Galactic Star Formation And Massive Black Hole Growth Through Simulations, Advisor: Andrés Escala.

Universidad de Chile, B.Sc. in Astronomy, with Highest Honors — *Mar 2006 - Dec 2009*

Research Interests

Numerical Simulations • Computational Fluid Dynamics • Cosmology • First Stars, Black Holes, and Galaxies • Star Formation

Publications

First Author

1. **Opacity Limit For Supermassive Black Hole Seeds**
   Becerra, F., Marinacci, F., Inayoshi, K., Bromm, V., Hernquist, L., Submitted
2. **Formation of Massive Protostars in Atomic Cooling Haloes**
   Becerra, F., Greif T. H., Springel V., Hernquist, L., 2015, MNRAS, 446, 2380
3. **The Interstellar Medium and Star Formation in Local Galaxies: Variations of the Star Formation Law in Simulations**
   Becerra, F., Escala, A., 2014, ApJ, 786, 56

Second Author

4. **Radiative effects during the assembly of direct collapse black holes**
   Smith, A., *Becerra, F.*, Bromm, V., Hernquist, L., Accepted
5. **Unveiling the Role of Galactic Rotation on Star Formation**
   Utreras, J., *Becerra, F.*, Escala, A., ApJ, 833, 1
6. **Gravitational Fragmentation in Galaxy Mergers: A Stability Criterion**
   Escala, A., *Becerra, F.*, del Valle, L., Castillo, E., 2013, ApJ, 763, 39

Outreach and extracurricular activities

EdX, Web Developer — *Jul - Aug 2017*

NOVA | PBS, Digital Video Intern — *Feb - May 2017*

VII Nexos USA-Chile Conference, "Earth and Space Sciences" Symposium Organizer — *Nov 2016*

Observatorio Astronómico Nacional, Tour Guide — *Aug 2011 - Jan 2012*

Programa EXPLORA, CONICYT, "Noticias del Universo" Exhibition Guide — *Oct - Nov 2009*

Honors & Awards

Philip Putnam Chase Fellowship, Harvard University — *2014*

Fulbright Fellowship (declined), Fulbright Chile — *2012*

CONICYT Fellowship, Comisión Nacional De Ciencia Y Tecnología, Chile — *2010 - 2012*

Universidad de Chile Fellowship, Universidad de Chile — *2006 - 2009*

Moisés Mellado Fellowship, Moisés Mellado Foundation — *2006 - 2009*

Outstanding student, Universidad de Chile — *2006 - 2009*

Teaching

Harvard University	**SPU: The Energetic Universe**	*Spring 2013-2014, 2014-2015*
	Ay17: Galactic and Extragalactic Astronomy	*Fall 2014 -2015*
Universidad de Chile	**AS750: Observational Astronomy**	*Fall 2012*
	FI2001: Mechanics	*Summer 2009, Fall 2010, 2011*
	AS2001: Introductory Astronomy	*Fall 2011*
	AS3101: Stellar Astrophysics	*Spring 2010*
	FI1001: Introduction to Newtonian Physics	*Spring 2008, 2009, Fall 2008*
Universidad Andrés Bello	**FMF021: Physics I**	*Spring 2009, Fall 2009*
	FMF023: Introduction to Physics	*Fall 2009*
Escuela de Verano	**Origin and Evolution of the Species**	*May - Aug 2010*
	Origin of the Universe and Life on Earth	*May - Aug 2010*
	Online Physics	*May - Nov 2008*
	Physics I	*Jan 2008*

Conferences

Talks	**VII Nexos Chile-USA Conference**, Philadelphia, PA, USA	*Nov 2016*
	EWASS 2015, Canary Islands, Spain	*Jun 2015*
	First Stars, Galaxies, and Black Holes: Now and Then, Groningen, Netherlands	*Jun 2015*
Posters	**First Stars V**, Heidelberg, Germany	*Aug 2016*
	The Physics of First Star and Galaxy Formation, Edinburgh, Scotland.	*Jun 2015*
Attended	**Frontiers in Star Formation**, New Haven, CT, USA	*Oct 2012*
	Multiwavelength Views of the ISM in High-Redshift Galaxies, Santiago, Chile	*Jun 2011*
	HIPACC International Summer School on Astro-Computing: Galaxy Simulations, Santa Cruz, CA, USA	*Jun 2010*

Press

Magazine	**Science et Vie**, China	*Jan 2017*
	Science et Vie, France	*Aug 2016*
Web	**Phys.org**, phys.org/news/2015-01-cosmic-seeds-black-holes.html	*Jan 2015*
	Instituto Nazionale di Astrofisica, www.media.inaf.it/2015/01/20/come-hanno-origine-i-buchi-neri-supermassicci/	*Jan 2015*
	Harvard-Smithsonian Center for Astrophysics, www.cfa.harvard.edu/news/su201503	*Jan 2015*

Skills

Programming	Python, C, IDL, MATLAB, Javascript, LaTeX
Software	Adobe Photoshop, Adobe Illustrator, Microsoft Office Suite
Web	HTML5, CSS, jQuery, D3.js, Three.js
Languages	English, Spanish
Other	Photography