

# Fernando Becerra

## ASTROPHYSICIST

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*Ph.D. candidate in Astronomy & Astrophysics at Harvard University with strong research skills in astrophysical numerical simulations. I have more than six years of experience developing simulation and analysis codes in languages like Python and C. I also possess a demonstrated history of teaching and outreach, among which creating interactive learning tools stands out.*

## 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 and Black Holes • Star Formation • Data Visualization

## 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., 2017, MNRAS, 472, 205S*

### 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*

## Work Experience

**EdX**, Web Developer

Jul - Sep 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

<b>Philip Putnam Chase Fellowship</b> , Harvard University	2014
<b>Fulbright Fellowship (declined)</b> , Fulbright Chile	2012
<b>CONICYT Fellowship</b> , Comisión Nacional De Ciencia Y Tecnología, Chile	2010 - 2012
<b>Universidad de Chile Fellowship</b> , Universidad de Chile	2006 - 2009
<b>Moisés Mellado Fellowship</b> , Moisés Mellado Foundation	2006 - 2009
<b>Outstanding student</b> , Universidad de Chile	2006 - 2009

## Teaching

Harvard University	<b>SPU19: The Energetic Universe</b>	Spring 2013-2014, 2014-2015
	<b>Ay17: Galactic and Extragalactic Astronomy</b>	Fall 2014 - 2015
Universidad de Chile	<b>AS750: Observational Astronomy</b>	Fall 2012
	<b>FI2001: Mechanics</b>	Summer 2009, Fall 2010, 2011
	<b>AS2001: Introductory Astronomy</b>	Fall 2011
	<b>AS3101: Stellar Astrophysics</b>	Spring 2010
	<b>FI1001: Introduction to Newtonian Physics</b>	Spring 2008, 2009, Fall 2008
Universidad Andrés Bello	<b>FMF021: Physics I</b>	Spring 2009, Fall 2009
	<b>FMF023: Introduction to Physics</b>	Fall 2009
Escuela de Verano	<b>Origin and Evolution of the Species</b>	May - Aug 2010
	<b>Origin of the Universe and Life on Earth</b>	May - Aug 2010
	<b>Online Physics</b>	May - Nov 2008
	<b>Physics I</b>	Jan 2008

## Conferences

Upcoming	<b>.Astronomy 9</b> , Cape Town, South Africa	Nov 2017
Talks	<b>VII Nexos Chile-USA Conference</b> , Philadelphia, PA, USA	Nov 2016
	<b>EWASS 2015</b> , Canary Islands, Spain	Jun 2015
	<b>First Stars, Galaxies, and Black Holes: Now and Then</b> , Groningen, Netherlands	Jun 2015
Posters	<b>First Stars V</b> , Heidelberg, Germany	Aug 2016
	<b>The Physics of First Star and Galaxy Formation</b> , Edinburgh, Scotland.	Jun 2015
Attended	<b>Frontiers in Star Formation</b> , New Haven, CT, USA	Oct 2012
	<b>Multiwavelength Views of the ISM in High-Redshift Galaxies</b> , Santiago, Chile	Jun 2011
	<b>HIPACC International Summer School on Astro-Computing: Galaxy Simulations</b> , Santa Cruz, CA, USA	Jun 2010

## Press

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

## Skills

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