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Born: Jan 16, 1978 – U.S. citizenship

Education

Sept. 2007 **Johns Hopkins University**
 Ph.D. in Astronomy
 Thesis advisors *Narciso Benítez* and *Holland Ford*

May 2004 M.S. in Astronomy
 Admitted on Kerr partial fellowship

May 1999 **Cornell University**
 B.S. in Applied & Engineering Physics
 with a concentration in Astrophysics
Cum Laude and Departmental Honors

Research

June 2013 – currently **ESA/AURA Astronomer at STScI**
 Instrument Science Division – Advanced Camera for Surveys
 Gravitational Lensing Coordinator – Hubble Frontier Fields

Sept. 2010 – June 2013 **Postdoctoral Fellow at STScI**
 with *Marc Postman* on **CLASH**,
 a Hubble Multi-Cycle Treasury project

Sept. 2007 – Sept. 2010 **Caltech Postdoctoral Scholar at Jet Propulsion Laboratory**
 with *Leonidas Moustakas*

Sept. 2007 **Thesis (JHU)**
 “Towards an Understanding of Dark Matter: Precise Gravitational
 Lensing Analysis Complemented by Robust Photometric Redshifts”

June 2000 – Sept. 2007 **ACS GTO Science Team Research Assistant at JHU / IAA**
 Jan. 2006 – Sept. 2007 hired to work at IAA (Andalusian Institute for Astrophysics)
 toward completion of my JHU degree
 with *Narciso Benítez* and *Holland Ford*

June 1997 – May 2000 Binary Black Hole Grand Challenge Project
 with *Saul Teukolsky*, **Cornell Univ.**

Sept. 1998 – May 1999 B.S. Honors Project: N-body galaxy simulations
 with *Richard Lovelace*, **Cornell Univ.**

2009 JPL Award for Outstanding Postdoctoral Research

“Cosmological Constraints from Gravitational Lens Time Delays”

Observing Time Awarded

- HST Cycle 21 – Infrared Grism Confirmation of a Strongly Lensed $z \sim 11$ Candidate: MACS0647-JD, 12 orbits (**P.I. Coe**)
- HST Cycle 19 – CLASH Multi Cycle Treasury program, 524 orbits (P.I. Postman: >\$2M) ACS + WFC3/UVIS+IR 16-band imaging of 25 galaxy clusters – Fully funding my postdoctoral research at STScI; I contributed significantly to the proposal
- HST Cycle 19 – GO 12534 (P.I. Teplitz: \$545K) – WFC3/UVIS imaging of the UDF
- HST Cycle 17 – GO 11689 (P.I. Renato Dupke) – ACS imaging of a galaxy cluster merger “Direct Observations of Dark Matter from a Second Bullet: The Spectacular Abell 2744” \$50K supported my analysis and leadership of the 18-member team I assembled; resulted in a publication by Merten, **Coe**, et al. on “Pandora’s Cluster”
- Spitzer Cycle 8 – program 80168 (P.I. Bouwens) – IRAC imaging of CLASH clusters
- VLT 90A (P.I. Infante) – A Magnified Galaxy at the Highest Redshift – XSHOOTER spectroscopic and HAWKI imaging follow-up of a candidate $z \sim 9.6$ galaxy
- Bolocam 2010B, 2011A, 2011B – (P.I.’s Golwala, Umetsu, Moustakas) – SZ (2.2mm) observations of CLASH clusters
- XMM AO-11 – proposal 069318 (P.I. Ettori) – imaging of three CLASH clusters
- LBT 2011B (#32), 2012A (#12) – (P.I. Nonino) – MODS spectroscopy in the fields of seven CLASH clusters
- Gemini South 2011B – program Q-6 (P.I. Carrasco) – GMOS spectroscopy in the field of Pandora’s Cluster

Observing Runs

Mar., Sept. ’06; Feb. ’07	Calar Alto: Alhambra Project
April ’03	Gemini NIR Imaging of ACS GTO Cluster Survey Targets

Teaching

Sept. 2000 – May 2001	Teaching Asst. Cornell Applied & Engineering Physics labs
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Students Supervised

June 2008 – August 2008	Prakhar Goel – Caltech SURF program
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Invited Talks

- May 2013 – CosmoLens (Marseille/LAM) – “Gravitational Telescopes Toward the Dark Ages”
- April 2013 – Cluster Lensing workshop (STScI) – stage setting talk: “The Next Frontiers of Gravitational Lensing”
- March 2013 – Trento cluster conference – “CLASH: Precise Cluster Mass Measurements from Multi-Wavelength Analyses”
- Dec. 2012 – JWST Science Working Group – “Recently Discovered $9 < z < 12$ Galaxies and Implications for JWST”

Other Recent Talks

- Sept. 2012 – Jan. 2013 – AAS; STScI; IPAC – “CLASH: Three Strongly Lensed Images of a Candidate $z \sim 11$ Galaxy”
- Jan.–Mar. 2012 – AAS 219 Austin; STScI; SnowPAC: Gravitational Lensing in the Age of Survey Science – “CLASH: Precise New Constraints on the Mass Profile of Abell 2261”
- July–Sept. 2011 – Cambridge; STScI – “Early Results from CLASH”
- May 2011 – Oxford “CLASH: Obtaining Robust Dark Matter Maps for 25 Galaxy Clusters”
- Feb. 2011 – UCL (University College London) “CLASH: Cluster Lensing and Supernova survey with Hubble”
- Previous talks at conferences: gravitational lensing (Aosta, Aussois, Sydney); dark matter (Paris); photometric redshifts (JPL, Vancouver); AAS 217, 215, 211
- Other previous talks: Berkeley, CalState, Caltech, Davis, Irvine, JHU, JPL, Riverside, San Diego, Santa Barbara, Santa Cruz, Stanford

Software Publicly Released and Supported

- LensPerfect – Strong gravitational lens mass map reconstructions yielding exact reproduction of all observed multiple images; high-resolution mass maps without assuming light traces mass
- ColorPro – Multiband image pipeline: PSF-corrected aperture-matched photometric catalogs
- SExSeg – Forces SExtractor to analyze objects in predefined apertures (using an input segmentation map)
- BPZ v1.99.3 (original version written by N. Benítez) – Bayesian Photometric Redshifts
- Trilogy – Automated color image generator from multiband FITS images: reveals faint features without saturating bright features
- Fisher.py – Fisher matrices and confidence contours: calculations & plots

NSF Proposal Review panel – 2011, 2013

Journal Referee – Astrophysical Journal, Astronomical Journal, Monthly Notices of the Royal Astronomical Society

Outreach

- Jan. 2013 – AAS Hyperwall (large multi-monitor display) – CLASH
- Dec. 2012 – radio interviews: WYPR (local NPR station), WBAL (NBC affiliate)
- Nov. & Dec. 2012 – “Space Fan” Google Hangouts
- Oct. 2012 – STScI public lecture
- Aug. 2012 – Science Channel: “How the Universe Works” season 2, “Extreme Orbits”
- Feb. 2009 – NASA JPL blog: “How We See Dark Matter”
- May 2009 – ScientificBlogging.com: “An Awful Waste of Space”
- Mar. 2008 – LAPD’s Deputy Auxiliary Program (8-13 year-olds): launched paper rockets
- Jan. 2008 – AstroZone at AAS: presented 20-foot 3-D Mars panorama to 250 attendees
- Dec. 2007 – “L.A.’s Best” (4th / 5th graders): planet demos & activities
- Apr. 2005 – JHU Physics Fair, 2nd Annual
- Aug. 2001 – Camp Sunrise: astronomy demos, incl. rockets and telescopes

Languages: English (native), Spanish (semi-fluent), French (8 years of study)