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Research Interests

- Study the $z > 6$ Universe using Gamma-ray Bursts as probes of primordial ISM, chemical enrichment and cosmic Star-formation. In particular, using rapid Optical/NIR spectroscopic follow-up of GRB afterglows and host galaxies studies using ground and space-based observatories.
- Study of time-domain phenomena (GRBs, SNe, Tidal disruption events) discovered by large area optical/NIR survey using rapid follow-up observations at different regimes.

Professional Experience

Space Telescope Science Institute /NASA
Postdoctoral Fellow

September 2015 – present

Study of Gamma-ray Bursts and host galaxies with rapid response instruments. Time-domain studies with future facilities (space- or ground-based). Member of the Thirty Meter Telescope Science-Definition Team for Time-domain science.

NASA Postdoctoral Program Fellow
(NASA/GSFC)

September 2013 – September 2015

First stars and galaxies ever formed and the chemical evolution of the Universe using Gamma-ray Bursts: collected the largest available sample of afterglow spectra in the optical and NIR. I collaborate with the *Swift* and *Fermi* NASA missions. I co-mentor two Ph.D. students from U. Maryland, in particular working with the Discovery Channel Telescope. I am part of the RATIR team.

Post-doctoral Scholar (UC Santa Cruz/UC Berkeley)

June 2010 – August 2013

Gamma-ray Burst studies as probes of the early Universe and the re-ionization epoch. Interstellar- and Intergalactic-medium studies using GRBs and Quasars. Lyman-limit systems and Damped Lyman-alpha systems. Member of the IMPS and the GRAASP collaborations. Organize the IMPS colloquium series. Study of GRBs and high-redshift Universe using GRB spectroscopic data as probes of the GRB environment and the interaction with the afterglow emission.

Education

PhD Student (PennState)

January 2006 – 2010

Graduate studies in Astronomy & Astrophysics. Thesis project: "Spectroscopic Study of Gamma-ray Burst Afterglows at Low and High Redshift". Advisor: Dr. D. B. Fox.

Swift Mission Research Assistant (PennState)

April 2005 – December 2005

Active role as "Science Planner" duty for the flight operations of the *Swift* satellite. UVOT data analyst of GRB afterglows and other astrophysical sources.

Laurea Degree (Master's equivalent) in Physics at *Università degli Studi di Milano* (Italy), Department of Physics.
 Thesis title: "Study of Optical and Infrared Afterglows of Gamma-Ray Bursts" Advisors: Giuseppe Bertin (Università degli studi di Milano), Stefano Covino (Osservatorio di Brera), Gabriele Ghisellini (Osservatorio di Brera).

First Author Publications

- "Happy Birthday Swift: Ultra-long GRB141121A and its broad-band Afterglow" Cucchiara et al. 2015, ApJ, 812,122
- "Unveiling the Secrets of Metallicity and Massive Star Formation Using DLAs along Gamma-ray Bursts" Cucchiara et al. 2015, ApJ 804, 51 [**13 citations**]
- "Gemini Spectroscopy of the Short GRB 130603B Afterglow and Host" Cucchiara et al. 2013, ApJ 777, 94 [**17 citations**]
- "An Independent Measurement of the Incidence of Mg II Absorbers along Gamma-Ray Burst Sight Lines: The End of the Mystery?" Cucchiara et al. 2013, ApJ 773, 82 [**11 citations**]
- "Constraining Gamma-Ray Burst Emission Physics with Extensive Early-time, Multiband Follow-up" Cucchiara et al. 2011, ApJ 743, 154 [**30 citations**]
- "A Photometric Redshift of $z \sim 9.4$ for GRB 090429B" Cucchiara et al. 2011, ApJ 736, 7 [**170 citations**]
- "Testing the Possible Intrinsic Origin of the Excess Very Strong Mg II Absorbers Along Gamma-Ray Burst Lines-of-Sight" Cucchiara et al. 2009, ApJ 697, 345 [**16 citations**]
- "The Gemini/GMOS Gamma-ray Burst Absorption Feature Catalogue" Cucchiara et al., in prep.
- on the Press: "Discovering the First Stars: Another Step Closer to the Beginning of the Universe", Gemini-Focus Newsletter, December 2011
- on the Web: "The furthest object ever observed", <http://youtu.be/x8GjYnNdrvk>

Observing Experience

- 2006: Palomar Hale (5m) telescope: 3 nights for supernovae and GRB host galaxy observations with DPSP instrument and WIRC.
- 2007: Palomar Hale (5m) telescope: 2 nights for GRB host galaxy studies using DPSP.
- 2008: WIYN (3.5m) telescope at Kitt Peak National Observatory: 5 nights with Hydra instrument for planetary nebulae studies.
- 2010: 7 nights at Lick Observatory (remote observing), with KAST spectrograph
- 2011: 4 nights at Keck Observatory (remote observing), with LRIS spectrograph, 3 nights at Lick (KAST)
- 2012: 12 nights at Lick Observatory (remote and on-site observing), with KAST and PrimeFocus Camera
- 2014-2015: 18 nights at the Discovery Channel Telescope (Arizona)

Academic Achievements

- 2015: Member of the International Astronomical Union
- 2014: Observing proposal approved as PI for 19.6 hours at Gemini-North
- 2014: Observing proposal approved as PI for 7.6 hours at Gemini-South
- 2013: Observing proposal approved as PI for 27 hours at Gemini-North/South
- 2012: Observing proposal approved as PI for 4 nights at Lick Shane 3-meter
- 2008: Zaccheus Daniel Award for Astronomy Grad Students (PennState)

Academic and not-academic Service

- Performed **referee duties** for major international journals (*The Astrophysical Journal*, *MNRAS*, *Astronomy & Astrophysics*)
- Performed **panel duties** for NASA funding programs (*Swift* and *Fermi* missions, NASA Astrophysics Data Analysis Program).

- Summer 2015: mentored Master student from Cal-State Northridge. The student has collected large amount of data of spectroscopic data, learn how to use python, and produced results which are in publishable format. A poster was produced and presented at the NASA Goddard Science fair.
- Summer 2014: co-mentoring two U. Maryland PhD student: GRBs observations with the Discovery Channel Telescope. Data analysis of CCD camera data and modeling of GRB lightcurves and spectra.
- 2013-2014: co-mentoring one junior physics student from Pomona college on *Swift* satellite data on two GRBs.
- 2010: Graduate Council representative for the Graduate Student Association (GSA), delegate of the European Student Association (EuroClub) at the International Student Council at PennState

Leadership

- 2014: NASA Goddard Association of Postdoctoral Scholars co-president
- 2012-2013: earned "Diversity and Inclusion program" certificate at UCSC (3 years validity)
- 2012: UCSC Astronomy dept. Postdocs representative
- 2010: Co-writer of the "Mentoring Tool-kit" for PennState Faculty, Grad-student and Postdocs¹
- 2010: Social Chair for the GSA, Graduate Council representative for the Graduate Student Association (GSA), member of the Graduate Student and Faculty issues committee
- 2009: Vice president of the Euroclub, delegate of the EuroClub at the International Student Council at PennState
- 2008: President of the European Student Association (Euroclub) at PennState University.

Talks

- IAU FM 10: "The Hosts of Stellar Explosions II", Honolulu (August 2015)
- Conference: "ISSI-Beijing meeting: Gamma-ray Bursts", Beijing, China (April 2015)
- Conference: "Back at the Edge of the Universe", Sintra, Portugal (March 2015)
- Conference: "Thirty Meter Telescope science forum", Arizona (July 2014)
- Conference: "The unquiet Universe", Italy (June 2014)
- Invited: Colloquium at U. Florida Astronomy department (April 9th, 2014)
- Invited: Colloquium at Catholic University Astronomy department (April 2nd, 2014)
- Invited: Lunch talk at Arizona State University Astronomy department (March 17th, 2014)
- Conference: "Galaxies meet GRB at Cabo de Gata" Spain, September 2013
- Conference: "Gemini Science&Users meeting", San Francisco, July 2012
- Conference: "Gamma Ray Bursts in the Era of Rapid Follow-up", Liverpool, June 2012
- Conference: "Gamma-ray Bursts 2012", Munich, May 2012
- Conference: "GRBs as probes", Como, May 2011
- Conference: AAS meeting, Washington D.C. 2010: Dissertation talk
- Conference: "The shocking Universe", Venice, September 2009
- Conference: "Swift meeting", NASA-GSFC, June 2005

Other Selected Publications (from 61 total peer-reviewed publications)

- *Identifying High-redshift Gamma-Ray Bursts with RATIR*
Littlejohns O. M., Butler N.R., **Cucchiara** A. et al., 2014, AJ 148, 2
- *GRB 120422A/SN 2012bz: Bridging the gap between low- and high-luminosity gamma-ray bursts*
Schulze S. Malesani D. **Cucchiara** A. 2014, ApJ 566A, 102
- *Evidence for dust destruction from the early-time colour change of GRB 120119A*
Morgan, A. N. 2014, MNRAS 440, 1810

¹<http://www.gradschool.psu.edu/current-students/mentoring/>

- *New constraints on gamma-ray burst jet geometry and relativistic shock physics*
Guidorzi, C. 2014, MNRAS 438, 752
- *The Afterglow and Environment of the Short GRB 111117A*
Margutti et al. 2012, ApJ 756, 63
- *Evolution of the Population of Very Strong MgII Absorbers*
Rodriguez Hidalgo et al. 2012arXiv1208.1739
- *PTF10iya: a short-lived, luminous flare from the nuclear region of a star-forming galaxy*
Cenko et al. 2012, MNRAS 420, 2684
- *The Spectroscopic Classification and Explosion Properties of SN 2009nz Associated with GRB 091127 at $z = 0.490$*
Berger et al. 2011, ApJ 743, 204
- *A Possible Relativistic Jetted Outburst from a Massive Black Hole Fed by a Tidally Disrupted Star*
Bloom et al. 2011 Science 333, 203
- *An Extremely Luminous Panchromatic Outburst from the Nucleus of a Distant Galaxy*
Levan et al. 2011 Science 333, 199
- *Afterglow Observations of Fermi Large Area Telescope Gamma-ray Bursts and the Emerging Class of Hyper-energetic Events*
Cenko et al. 2011 ApJ 732, 29
- *A γ -ray burst at a redshift of $z \sim 8.2$*
Tanvir et al. 2009, Nature 461, 1254
- *Discovery of the Very Red Near-Infrared and Optical Afterglow of the Short-Duration GRB 070724A*
Berger et al. 2009, ApJ 704, 877
- *GRB 081203A: Swift UVOT captures the earliest ultraviolet spectrum of a gamma-ray burst*
Kuin et al., 2009, MNRAS 395L, 21
- *The redshift and afterglow of the extremely energetic gamma-ray burst GRB 080916C*
Greiner et al., 2009, ApJ 498, 89
- *The First Swift Ultraviolet/Optical Telescope GRB Afterglow Catalog*
Roming et al., 2009, ApJ 690, 163
- *Broadband observations of the naked-eye γ -ray burst GRB080319B*
Racusin et al., Nature 455, 183
- *An extremely luminous X-ray outburst at the birth of a supernova*
Soderberg et al., 2008, Nature 454, 246
- *The complex light curve of the afterglow of GRB071010A*
Covino et al, 2008, MNRAS 388, 347
- *An extremely luminous X-ray outburst at the birth of a supernova*
Soderberg et al., Nature 453, 469
- *GRB 070125: The First Long-Duration Gamma-Ray Burst in a Halo Environment*
Cenko et al, 2008, ApJ 677, 441
- *Photometric calibration of the Swift ultraviolet/optical telescope*
Poole et al., 2008, MNRAS 383, 627
- *A New Population of High-Redshift Short-Duration Gamma-Ray Bursts*
Berger et al., 2007, ApJ 664, 1000
- *The exceptionally extended flaring activity in the X-ray afterglow of GRB 050730 observed with Swift and XMM-Newton*
Perri et al., 2007, A&A 471, 83
- *Simultaneous Swift and REM Monitoring of the Blazar PKS 0537-441 in 2005*
Pian et al., 2007, ApJ 664, 106

- *Properties of a Gamma-Ray Burst Host Galaxy at $z \approx 5$*
Price et al., ApJ 663L, 57
- *Swift detection of all previously undetected blazars in a micro-wave flux-limited sample of WMAP foreground sources*
Giommi et al., 2007, A&A 468, 571
- *Swift ultraviolet photometry of the Deep Impact encounter with Comet 9P/Tempel 1*
Mason et al., 2007, Icarus 187, 123
- *Swift ultraviolet photometry of the Deep Impact encounter with Comet 9P/Tempel 1*
Mason et al., 2007, Icarus 191S, 286
- *The flaring afterglow of GRB 050730*
Perri et al., 2006, Nuovo Cimento 121, 1557
- *Gemini spectroscopy of the afterglow of GRB060210*
Cucchiara et al., 2006, Nuovo Cimento 121, 1455
- *A novel explosive process is required for the γ -ray burst GRB 060614*
Gal-Yam et al., 2006, Nature 444, 1053
- *Very Early Optical Afterglows of Gamma-Ray Bursts: Evidence for Relative Paucity of Detection*
Roming et al., 2006, ApJ 652, 1416
- *GRB afterglow absorption line spectroscopy—Elemental abundances and physical conditions in the GRB host galaxy*
Berger et al., 2006, Nuovo Cimento 121, 1373
- *Swift and infra-red observations of the blazar 3C 454.3 during the giant X-ray flare of May 2005*
Giommi et al., 2006, A&A 456, 911
- *Discovery of an Extreme MeV Blazar with the Swift Burst Alert Telescope*
Sambruna et al., 2006, ApJ 646, 23
- *Swift and XMM-Newton observations of the dark GRB 050326*
Moretti et al., 2006, A&A 451, 777
- *Swift UVOT Observations of X-Ray Flash 050406*
Schady et al., 2006, ApJ 643, 276
- *The weak INTEGRAL bursts GRB 040223 and GRB 040624: an emerging population of dark afterglows*
Filliatre et al., 2006, A&A 448, 971
- *Swift Panchromatic Observations of the Bright Gamma-Ray Burst GRB 050525a*
Blustin et al., 2006, ApJ 637, 901
- *A rapid and dramatic outburst in Blazar 3C 454.3 during May 2005. Optical and infrared observations with REM and AIT*
Fuhrmann et al., 2006, A&A 445L, 1
- *SN 2003lw and GRB 031203: A Bright Supernova for a Faint Gamma-Ray Burst* (2004, ApJ 609L, 5)
Malesani, D.; Tagliaferri, G.; Chincarini, G.; Covino, S.; Della Valle, M.; Fugazza, D.; Mazzali, P. A.; Zerbi, F. M.; D'Avanzo, P.; Kalogerakos, S.; Simoncelli, A.; Antonelli, L. A.; Burderi, L.; Campana, S.; **Cucchiara, A.**; Fiore, F.; Ghirlanda, G.; Goldoni, P.; G  tz, D.; Mereghetti, S.; Mirabel, I. F.; Romano, P.; Stella, L.; Minezaki, T.; Yoshii, Y.; Nomoto, K.

Publication list (not refereed articles)

- *Discovery of the Very Red Near-Infrared and Optical Afterglow of the Short-Duration GRB 070724A*
Cenko et al., 2009arXiv0908.0940
- *A glimpse of the end of the dark ages: the gamma-ray burst of 23 April 2009 at redshift 8.3*
Tanvir et al., 2009arXiv0906.1577
- *Variability of low-luminosity AGNs: a simultaneous X-ray/UV look with Swift*
Pian et al., 2009arXiv0905.1266
- *Alpha Enhancement In Strong And Weak MgII Absorbers*
Wessels et al., 2009AAS, 21348206
- *A Kinematic Comparison of Strong Mg II Absorbers Along Quasar and GRB Sightlines*
Jones et al., 2009AAS, 21347608
- *The Enigma of the Strong MgII Absorbers along the GRB Sightlines*
Cucchiara et al., 2009AAS...21335202
- *Testing the LINERs paradigm with Swift simultaneous UV to X-ray data*
Romano et al., 2008agn8.confE, 25
- *GRB 070125: The First Long-Duration Gamma-ray Burst in a Halo Environment*
Cenko et al., 2008AIPC.1000, 342
- *Swift uncovers that SAX J0840.7+2248 is not an X-ray Binary, but BeppoSAX X-ray Rich GRB 980429*
Romano et al., 2008AIPC.1000, 146
- *GRBs 070429B and 070714B: The High End of the Short-Duration Gamma-Ray Burst Redshift Distribution*
Cenko et al., 2008arXiv0802.0874
- *Variability of low-luminosity AGNs: a simultaneous X-ray/UV look with Swift*
Romano et al., 2008int. workE, 64
- *Multifrequency Observations of the Blazar 3C 279 in January 2006*
Collmar et al., 2007arXiv0710.1096
- *Multifrequency Observations of the Blazar 3C 279 in January 2006*
Collmar et al., 2007ESASP.622, 207
- *The frontier of darkness: the cases of GRB 040223, GRB 040422, GRB 040624*
D'Avanzo et al., 2006AIPC, 836, 467
- *SN 2003lw and GRB 031203: a bright supernova for a faint gamma-ray burst*
Covino et al., 2004MSAIS, 5, 160
- *The intriguing host-galaxy of GRb031203*
Tagliaferri et al., 2004cosp. 35.2929