EDA GJERGO, Ph.D.

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EMPLOYMENT

Nanjing University — September 2022 - Present
Postdoctoral Scholar — *Nanjing, China*

Wuhan University — October 2019 - August 2022
Postdoctoral Scholar — *Wuhan, China*

Università degli Studi di Trieste — 2015 - 2019
Research Assistant — *Trieste, Italy*

Argonne National Laboratory — 2011 - 2015
Co-op and Junior Team Member — *Chicago, IL*

Sperling & Kupfer — 2007
Popular Science Co-writer — *Milan, Italy*

VISITS

Beijing Normal University — November 15-30, 2020
Visiting Scholar — *Beijing, China*

Beihang University of Aeronautics and Astronautics — December 1-15 2020
Visiting Scholar — *Beijing, China*

EDUCATION

Università degli Studi di Trieste — Thesis defense: Feb 15th 2019
Doctor of Philosophy in Physics — *Trieste, Italy*

· Thesis Title: Dust Evolution in Galaxy Cluster Simulations
· National Institute for Astrophysics (INAF) fellowship

Illinois Institute of Technology — Degree conferred on: May 2014
Bachelor of Science in Applied Mathematics — *Chicago, IL*

· International Scholarship

Illinois Institute of Technology — Degree conferred on: May 2014
Bachelor of Science in Physics — *Chicago, IL*

· International Scholarship

United World College of the Adriatic — Degree conferred on: May 2008
International Baccalaureate Diploma — *Duino, Italy*

· Italian Ministry of Foreign Affairs Full Scholarship (3.5% acceptance rate)

RESEARCH INTERESTS

Galactic chemical evolution, dust modeling, cosmological simulations, interstellar and intracluster medium, supernova cosmology, dark energy models.

RESEARCH AND WORK EXPERIENCE

Nanjing University September 2022 – Present
Postdoctoral Scholar *Nanjing, China*

· Working on extending my Chemical evolution code GalCEM to multizone models.
· Working on a variable IMF.
· Co-mentoring undergraduates Zihao Lin and Rundong Yu.

Wuhan University October 2019 – August 2022
Postdoctoral Scholar *Wuhan, China*

· Developed a detailed, modular, efficient, and flexible galactic chemical evolution code (GalCEM) which tracks the abundance of all stable isotopes in galaxies of varying morphologies.

- Elements from Carbon to Zinc are primarily enriched through contributions from Supernovae Core Collapse (SNCC), Supernovae Type Ia, and AGB stars, as it has been extensively investigated in literature. For such elements, I include these 3 enrichment channels in my code.
- For the treatment of heavy elements, on top s-process contributions from updated AGB and SNCC yield tabulations, I include r-process elements. I include a sophisticated modeling of Neutron Star Mergers, as well as Collapsars, neutrino-driven winds, and Magnetohydrodynamic SN jets. All available isotopic yields are included to date, have never been used in chemical evolution modeling to this level of completeness.
- The code presentation paper is in submission. The paper on heavy elements is in substantial preparation.

· Was the instructor for 2 modules of the Classical Mechanics undergraduate class.
· Mentored an undergraduate student, Jinning Liang, through a first-authorship publication. Offered guidance in navigating the literature, observational databases, scientific writing, critical thinking, data processing and data visualization.

- Corresponding author to Jinning Liang's first author publication.

· Joined the *Middle Ages Galaxy Properties with Integral Field Spectroscopy (MAGPI)* Survey, contributed to drafting a JWST proposal, helped with the Lyman Alpha Emitter classification. Will investigate dust depletion and distribution at later stages of the survey.

Osservatorio Astronomico di Trieste February 2019 – September 2019
Research Assistant *Trieste, Italy*

· Employed analytical methods to compute dust abundances in galaxy clusters at low-to-intermediate redshift, by means of sophisticated chemical evolution models.

- Through the use of luminosity functions, confirmed that chemical evolution models are consistent with identifying spiral galaxies as the main sources of dust in galaxy clusters.
- Shown that minor galaxies or filamentary structures ~ 1 dex smaller than the break of the Schechter functions cannot be major sources of galaxy cluster dust.

Università degli Studi di Trieste November 2015 – January 2019
Doctor Philosophiae in Physics *Trieste, Italy*

· Adapted a one-zone dust evolution model to cosmological zoom-in simulations of galaxy clusters.

- My work is the first implementation of dust evolution within cosmological simulations of galaxy clusters.

- Converted the theoretical dust evolution model of Hirashita (2015) into a numerical algorithm written in `C`. I embedded this algorithm into GADGET-3, a private simulation code which runs Tree-Particle-Mesh dynamics, smoothed particle hydrodynamics, radiative cooling, star formation and feedback, AGN feedback, and chemical evolution.
  - Tested the consistency of our dust distribution against other common dust distribution models. I verified that our method falls within a small margin of the predictions by said models.
  - Tested a handful of dust production methods into the simulation, including a novel stoichiometry-preserving one (adopted as fiducial production), because it is representative to first order of the characteristic chemical makeup of astrophysical dust in stellar envelopes and dense environments.
  - Investigated the impact of different chemical evolution yields on dust abundances.
  - Included and tested thermal sputtering as the main destruction mechanism in the Intracluster Medium.
  - Became comfortable with running and editing complex parallel codes designed for supercomputers.
- The work appeared in the journal *Monthly Notices of the Royal Astronomical Society*. It was presented at ESO (Garching, Germany), and in several Italian venues.
- Compared the output of our simulation to observational data:
  - The simulated dust abundances are in agreement with local galaxy data, including galaxies of low-metallicity.
  - The simulation slightly underproduces dust masses compared to Planck SED observations at low-to-intermediate redshift. I am currently solving the cause of the discrepancy, but in the paper the problem was approached by relaxing the sputtering timescale.
- Developed a post-processing analysis package written in `Python` to extract and manipulate the simulation's data across cosmic history. The package will be fully accessible to the group and can be customized beyond the end of my PhD program.
  - Wrote an algorithm to trace the evolution history of individual gas particles, as well as special subsets of the simulated particles across cosmic time.
  - Wrote automated python scripts to submit my post-processing routines to the supercomputer's queue, on top of the standard queuing procedure.
  - Learned about special structures which form in smoothed particle hydrodynamical simulations, such as Kaufmann blobs, and the bona fide gas arising from ram pressure stripping. I verified that the sites of dust evolution are not numerical artefacts, but are consistent with the physics we aimed to simulate.

· Analyzed the Spectral Energy Distribution (SED) and the IRX-β relation of simulated high redshift galaxies. I imposed *SPace Infrared telescope for Cosmology and Astrophysics* (SPICA) specifications on flux threhsolds and passbands to the post-processing radiative transfer analysis of *MUlti-Phase Particle Integrator* (MUPPI) cosmological zoom-in simulations of galaxies.

Argonne National Laboratory September 2011 – August 2015
Junior Team Member *Argonne, IL*

· Worked on the forecast of cosmology constraints for the Dark Energy Survey (DES) through the photometric selection of Type Ia supernovae, and aided to the coding the analysis framework of upcoming observations.

- Published in the journal *Astroparticle Physics*, and was presented at the April 2012 APS Meeting, as well as the 221^{st} AAS 2013 Meeting.
- Contributed to the coding of an improved Figure of Merit (FoM), first advocated by the Dark Energy Task Force, which is a Fisher Matrix quantification of the impact of data sets on cosmology parameters.
- Improved the accuracy of the FoM by including the systematic error for core collapse supernovae.

· Initiated a preliminary study of the six optical ugrizy4 filters for the Large Synoptic Survey Telescope (LSST), and their impact on supernova science.

- Provided, on behalf of the DESC supernova group, the filter analysis of the candidate filter vendors able to meet LSST's specifications. The study played a major role in the vendor choice by the LSST committee.
- Explored the effects of ripple amplitude, tapering, leakage of the filters and host-galaxy prior to photo-z supernovae studies.
- Presented our results at the LSST / Dark Energy Science Collaboration (DESC) Meeting in Pittsburgh.
- Represented the LSST project with this work at the 223^{rd} AAS Meeting.

· Explored alternatives to vacuum energy.

- Selected a model for quintessence and a model for modified gravity, and evaluated the constraints to three supernova data sets. Presented our results as a poster at the AAS 222^{nd} Meeting,
- Was awarded with the 2013 Chambliss Astronomy Achievement Student Award for the work.

· Communicated science to a range of audiences, from experts to high school students.

- Presented monthly research progress during the LSST Supernova Science Working group webinars in 2013.
- Explained peer-reviewed cosmology papers during weekly journal clubs at Argonne National Lab.
- Coached new students in the use of the Linux operating system. Taught background knowledge on cosmology, big bang theory, supernovae as standard candles, and cosmic microwave background.
- Co-wrote, co-produced, and hosted 11 Youtube videos on cosmology for the general audience. `http://www.youtube.com/TheCosmicWeb`, and presented this material to 4 classes of high school students.

Illinois Institute of Technology June 2010 – August 2011
Independent study *Chicago, IL*

· Independent reading of a variety of peer-reviewed papers, and attended weekly seminars of the IIT Meshfree Methods group.
· The topics included the MOND paradigm, the Saari conjecture, dark matter models, functional analysis, and positive definite kernels.

Sperling & Kupfer, branch of Mondadori July 2006 – April 2007
Co-author of Così parlano le stelle *Milan, Italy*

· Co-authored a best-seller book for the general public on the fundamental forces of physics, with renowned Italian astrophysicist Margherita Hack. `https://amzn.to/2Kj0FwV`

- Won *Frascati Scienza: La scienza per tutti*, 2010, awarded for communicating science to the general public. The book was selected for this award jointly by 4 National Institutes of Physics in Italy.
- In May ′07 the book ranked #10 in the national bestseller list across all categories, and #2 for the non-fiction category. (surpassed only by the book of Pope Benedict XVI !)
- Invited to present the book in many venues across Italy, including Milan, Florence, Rome, and Trieste.
- Interviewed by Piero Angela at the Quirinale, the residence of the Italian President of the Republic, with Giorgio Napolitano in office, in occasion of the 2007 New Academic Year inauguration.

Summer Science Program June 2007 – August 2007
Research Project Student *Ojai, CA*

- Determined the orbit of a near-earth asteroid from scratch: from data collection with both photographic plates and CCD optical images on 11" and 14" telescopes respectively, to the computation of the asteroid's orbit using spherical trigonometry and numerical differentiation on Python. Submitted observations to the Minor Planet Center.
- Conducted additional research on Messier Objects and Jupiter's satellites. Coded a VPython model of the Solar System.
- Sponsored by the California Institute of Technology, Stanford University, Harvey Mudd College, UCLA, and NASA's Jet Propulsion Laboratory. Competitive admission with a ∼17% rate of acceptance.
- `http://www.summerscience.org/home/index.php`

PUBLICATIONS IN CHRONOLOGICAL ORDER

7. GalCEM I: An Open-source Detailed Isotopic Chemical Evolution Code 2023
Gjergo Eda, Sorokin Aleksei, Ruth Anthony, Spitoni Emanuele, Matteucci Francesca, Fan Xilong, Liang Jinning, Limongi Marco, Yamazaki Yuta, Kusakabe Motohiko, Kajino Toshitaka
Wuhan University, Nanjing University, Illinois Institute of Technology, Université Côte d'Azur, INAF Trieste, INAF Roma, Università degli Studi di Trieste, IFPU, INFN, Beihang University, University of Tokyo, NAOJ, Kavli IPMU

- The Astrophysical Journal Supplement Series, Volume 264, Issue 2, id.44, 22 pp.

6. LAMOST meets Gaia: The Galactic open clusters 2022
F X., et al.

- Astronomy & Astrophysics, Volume 668, id.A4, 16 pp.

5. The MAGPI Survey – science goals, design, observing strategy, early results and theoretical framework 2021
Foster C., et al. *The MAGPI Collaboration*

- Publications of the Astronomical Society of Australia, 2021, Volume 38, article id. e031

4. On the Origin of the Galaxy Cluster Dust at low to intermediate redshift. 2020
Gjergo Eda, Matteucci Francesca, Palla Marco, Lacchin Elena, Biviano Andrea
Osservatorio Astronomico di Trieste INAF, Università di Trieste, Institute Nazionale di Fisica Nucleare (INFN), IFPU - Institute for Fundamental Physics of the Universe, Wuhan University

- Monthly Notices of the Royal Astronomical Society, Volume 493, Issue 2, p.2782-2792.

3. Dust Evolution in Galaxy Cluster Simulations June 2018
Gjergo Eda, Granato Gian Luigi, Murante Giuseppe, Ragone-Figueroa Cinthia, Tornatore Luca, Borgani Stefano.
Osservatorio Astronomico di Trieste INAF, Università di Trieste, Instituto de Astronomia Teorica y Experimental (IATE), Consejo Nacional de Investigaciones Cientificas y Tecnicas de la Republica Argentina (CONICET), Observatorio Astronomico, Universidad Nacional de Cordoba

· Monthly Notices of the Royal Astronomical Society, Volume 479, Issue 2, p.2588-2606.

2. Analytic photometric redshift estimator for Type Ia supernovae from the Large Synoptic Survey Telescope June 2015
Wang Yun, Gjergo Eda, Kuhlmann Stephen
Argonne National Laboratory, California Institute of Technology, University of Oklahoma

· Monthly Notices of the Royal Astronomical Society, Volume 451, Issue 2, p.1955-1963.

1. Type Ia supernovae selection and forecast of cosmology constraints for the Dark Energy Survey February 2013
Gjergo Eda, Duggan Jefferson, Cunningham John, Kuhlmann Stephen, Biswas Rahul, Kovacs Eve, Bernstein Joseph, Spinka Harold
Argonne National Laboratory, Illinois Institute of Technology, Loyola University Chicago

· Astroparticle Physics, Volume 42, p. 52-61.

SUBMITTED

Yield performance against Galactic stellar abundances with NuPyCEE 2022
Liang J., Gjergo E., Fan X.L.

· Submitted to MNRAS. EG is the corresponding author.

IN SUBMISSION

GalCEM II: Investigating the impact of enrichment channels on the chemical evolution of all neutron-capture isotopes with GalCEM 2022
Gjergo E., Sorokin A., Ruth A., Spitoni E., Kusakabe M., Kajino T., Limongi M., Yamazaki Y., Liang J., Matteucci F., Fan X.L.

· To be submitted to A&A

PROPOSALS

An ACA census of Galactic metal-poor molecular clouds 2021
Lingrui Lin, *Zhiyu Zhang, Yichen Sun, Jing Zhou, Gan Luo, Di Li, Yan Sun, Eda Gjergo Atacama Compact Array, 2021B-A013 submission*

· approved

Constraining the initial mass function in a high redshift strongly-lensed galaxy 2022
ZiYi Guo, *Zhiyu Zhang, Jing Zhou, Yichen Sun, Eda Gjergo, Zhiqiang Yan VLA/2022-00-036*

· submitted

The MAGPI-MIRI survey: Unveiling the Evolution of Dust with Galaxy Environment 2022
Battisti Andrew, *R. Bassett, D. Calzetti, C. Foster, E. Gjergo, A. Kirkpatrick, J. Mendel, A. Pope, J. Trayford, C. Urbina, E. Wisnioski JWST Proposal, 1799 submission*

· submitted

MENTORING

Zihao Lin Isotopic abundance gradients in the Galactic disk
2022-present *Nanjing University*

Rundong Yu — Low-mass IMF variation in high metallicity environments
2022-present — *Nanjing University*

Jinning Liang — Yield Performance Against Galactic Stellar Abundances with NuPyCEE
2021-present — *Wuhan University*

CLASSES

Classical Mechanics — September 2020
Invited Lecturer — *Wuhan University, China*

· Two-Hour class on the hydrostatic equilibrium in stars, and on the Virial theorem for undergraduate students enrolled in a Classical Mechanics course at Wuhan University. I prepared homework and solutions as well as in-class activities.

Introduction to Astrophysics — April 2017, April 2018
Invited Lecturer — *University of Trieste, Italy*

· Two-Hour class on general relativity and cosmology for undergraduate students enrolled in the Introduction to Astrophysics course at the University of Trieste.

Yerkes Observatory High School Summer Program — July 29, 2013
Invited Lecturer — *Yerkes Observatory, WI*

· Hour-long seminar on cosmology (big bang theory, DM, DE, and CMB) for high school students selected to the program.
· `http://prezi.com/1ytyie0rvdtb/?utm_campaign=share&utm_medium=copy`

INVITED SEMINARS

The Galactic Chemical Evolution of Heavy Elements — Apr 22, 2022
Invited Speaker — *Bonn University, Bonn, Germany*

· Invited speaker for the weekly online seminar.

The Galactic Chemical Evolution of Heavy Elements — Jan 12, 2022
Invited Speaker — *GW NEXT 22 online conference, Kavli Institue at PKU, Beijing, China*

· 45-minute introduction designed for early-career gravitational wave scientists.

The Galactic Chemical Evolution of Heavy Elements — May 28, 2021
Invited Speaker — *NAO group meeting, Beijing, China*

· Hour-long seminar introducing LAMOST observers to galactic chemical evolution.

On the Origin of Dust at low-to-intermediate Redshifts — November 2020
Invited Speaker — *Kavli Institue at PKU, Beijing, China*

· Hour-long seminar on my PhD work as well as 2020 publication.

Dust Evolution in Galaxy Cluster Simulations — December 2019
Invited Speaker — *Beijing Normal University, China*

· Hour-long seminar on my PhD work.

Third International Workshop on recent LHC results and related topics October 10-12, 2018

Invited Speaker *Faculty of Natural Sciences, University of Tirana, Albania*

· Hour-long seminar on cosmology and cosmological simulations, presented to an audience of CERN researchers and Albanian graduate students.

Second International Workshop on recent LHC results and related topics Semptember 26-27, 2016

Invited Speaker *Faculty of Natural Sciences, University of Tirana, Albania*

· Hour-long seminar on dark matter and dark energy frontiers, presented to an audience of CERN researchers and Albanian graduate students.

REPORTS

Filter Study for LSST using supernovae simulations and photo-z host galaxy bias 2014

Gjergo Eda, Kuhlmann Stephen, Gilmore D. Kirk, Kessler Richard

Argonne National Laboratory, Illinois Institute of Technology,
Kavli Institute for Cosmological Physics, SLAC National Accelerator Laboratory *AAS 223 Poster*

· Honorable Mention for the AAS Chambliss Student Achievement Award

Comparison of Supernova Data Sets with Modified Gravity and Dark Energy Models 2013

Gjergo Eda, Pedersen Keith, Shylnov Yurii, Kuhlmann Steve

Argonne National Laboratory, Illinois Institute of Technology *AAS 222 Poster*

· Winner of the AAS Chambliss Student Achievement Award

· `http://aas.org/posts/news/2013/06/congratulations-aas-222-chambliss-student-award-winners`

Cosmology Biases in the Analysis of Future Supernova Surveys 2013

Stanwyck Lynn, Gjergo Eda, Kuhlmann Stephen, Biswas Rahul, Kovacs Eve

Argonne National Lab, Illinois Institute of Technology, Johns Hopkins University *AAS 222 Poster*

Type Ia Supernovae Selection and Forecast of Cosmology Constraints for the Dark Energy Survey 2012

Gjergo Eda, Duggan J., Cunningham J., Kuhlmann S., Biswas R., Kovacs E., Bernstein J. P., Spinka H.

Argonne National Laboratory, Loyola University Chicago, Illinois Tech *AAS 221 Poster*

Uncertainties in Core Collapse Supernovae Simulations 2012

Duggan, Jefferson; Cunningham, J.; Kuhlmann, S.; Biswas, R.; Kovacs, E.; Spinka, H.

Argonne National Laboratory, Loyola University Chicago, Illinois Tech *AAS 221 Poster*

Uncertainties in Core Collapse Supernovae Simulations 2014

Duggan Jefferson, Gjergo Eda, Cunnigham John, Kuhlmann Stephen

Loyola University Chicago, Argonne National Laboratory, Illinois Institute of Technology

Generalization of selected $f(R)$ Relativity models and cluster constraints 2014

Shylnov Yurii, Gjergo Eda, Kuhlmann Stephen

Illinois Institute of Technology, Argonne National Laboratory

TECHNICAL TALKS

MAGPI Busyweek June 2021
Participant and Oral Presenter *Webinar*

· https://magpisurvey.org/

HydroSim Meeting September 13-16, 2016
Participant and Oral Presenter *Trieste, Italy*

· https://indico.ict.inaf.it/event/440/contributions/

LSST-DESC Collaboration Meeting December 4-6, 2013
Participant and oral presenter *Pittsburgh, PA*

· https://indico.bnl.gov/conferenceDisplay.py?confId=691

LSST DESC SN Working Group June, July, August, September, October, November 2013
Participant and presenter *Restricted 1-hour webinar*

· Presenter of filter studies for LSST using supernovae simulations and photo-z host galaxy bias.

DESSN Workshop July 15-19, 2013
Participant *KICP at the University of Chicago, Chicago, IL*

· https://cdcvs.fnal.gov/redmine/projects/des-sn/wiki/DESSN_Worshop_at_UofC_KICP

TALKS

The 16 th International Symposium on Origin of Matter and Evolution of Galaxies (OMEG16) October, 2022
Online Participant and Oral Presenter *Hanoi, Vietnam*

· https://iop.vast.vn/~omeg16/

Interstellar Physics and Chemistry January, 2022
Online Participant and Oral Presenter *Zhuhai, China*

· https://ism.dust.fan/ism2021/

Origin of Elements and Cosmic Evolution: From Big-Bang to Supernovae and Mergers December, 2019
Participant and Oral Presenter *Beihang University, Beijing, China*

· http://oece2019.csp.escience.cn/

The Milky Way 2019: LAMOST and Other Leading Surveys October, 2019
Participant and Oral Presenter *YiChang, China*

· http://mw2019.csp.escience.cn/dct/page/65585

Italian Cluster II Sept 10-13, 2018
Participant and Oral Presenter *Naples, Italy*

· https://sites.google.com/view/cluster2/

Early Stages of Galaxy Cluster Formation July 17-21, 2017
Participant and Oral Presenter *Garching, Germany*

· https://www.eso.org/sci/meetings/2017/GCF2017/program.html

Beyond the Solar Neighborhood January 22-27, 2017
Participant and Oral Presenter *Sexten, Italy*

· http://adsabs.harvard.edu/abs/2017bsne.confE..25G

23rd Annual Argonne Symposium November 1, 2013
Participant and Oral Presenter *Argonne, IL*

· Website: http://www.dep.anl.gov/p_undergrad/ugsymp/
· Presentation: http://prezi.com/opbnxxw0syr1/?utm_campaign=share&utm_medium=copy

23rd Midwest Relativity Meeting October 25-27, 2013
Participant and Oral Presenter *University of Wisconsin-Milwaukee, Milwaukee, WI*

· Meeting's website: http://www.gravity.phys.uwm.edu/conferences/mwrm2013/index.html
· Talk (Presented by Eda Gjergo): http://tinyurl.com/23RelativityMtgMilwaukeeGjergo
· Talk (Presented by Yurii Shylnov):http://tinyurl.com/23RelativityMtgMilwaukeeShylno

KICP Supernova Hub Workshop March 2012
Participant and oral presenter *Kavli Institute of the University of Chicago, Chicago, IL*

· Technical talk on "Photometric Identification of Supernova"
· Talk: http://kicp-workshops.uchicago.edu/SNphotID_2012/depot/talk-gjergo-eda.pdf

SKILLS

Languages	(native) Italian, English, Albanian, (studying) Chinese, (elementary) German, Latin
Computing	Mathematica, MATLAB, Octave, ROOT, Maple,
Astronomy codes	GADGET-2/3, CosmoMC, SNANA, SNCosmo
Programming	**Python**, Fortran90/77, C, IDL
OS	Linux, macOS, Microsoft Windows
Editor/Misc.	Emacs, Vi, SVN, TotalView, Anaconda.
Markup	HTML/CSS, LaTeX

AWARDS

• National Institute of Astrophysics (INAF) Fellowship (2015-2018)

• Winner of the Chambliss Astronomy Achievement Student Award for the American Astronomical Society, Summer 2013.

• Honorable Mention for the Chambliss Astronomy Achievement Student Award for the American Astronomical Society, Winter 2014.

• College of Science and Letters Dean's List for excellent scholarly achievement. (Spring 2010, Fall 2014).

• IIT Undergraduate Research Day Award, 2^{nd} place, 2011.

• IIT SIAM Math Problem Competition Award, 2010.

• Best Seller, Italy, Summer 2007, 10^{th} place nationwide and 2^{nd} place in the non-fiction category, for the book *Così parlano le stelle*.

• Winner of *Frascati Scienza: La scienza per tutti*, 2010, awarded for *Così parlano le stelle*.

• 2-year merit based full scholarship for the United World College of the Adriatic (3.5% rate of admission in Italy, academic year 2006-2008).

• 1^{st} place winner of the *Concorso Liceale di Scrittura in Astronomia dell'Osservatorio di Arcetri*, 2006.

• Participated in the Regional Olympiads in Mathematics, Friuli-Venezia-Giulia Region, Italy, 2007.

• Participated in the Regional Olympiads in Physics, Friuli-Venezia-Giulia Region, Italy, 2007.

• Participated in the Regional Olympiads in Mathematics, Toscana, Italy, 2005.

• Participated in the National Olympiads in Astronomy, Italy, 2004.

POSTERS AND MISCELLANEOUS CONFERENCES

Italian Cluster I Feb 27 - March 1, 2017
Participant and Poster Presenter *Turin, Italy*

· `https://sites.google.com/view/cluster1/`

KROME Computational school September 19-21, 2016
Participant *Florence, Italy*

· `http://www.kromepackage.org/bootcamp/index.php`

ICTP Workshop on Large-Scale Structure June 2016
Participant *Trieste, Italy*

· `http://indico.ictp.it/event/7630/`

ICTP Summer School of Cosmology June 2016
Participant and Poster Presenter *Trieste, Italy*

· `http://indico.ictp.it/event/7626/`

Lucchin school 2016 May 2016
Participant *Naples, Italy*

· `http://eventi.na.astro.it/en/scuola-lucchin/`

Santa Fe Cosmology Workshop July 1-19, 2013
Participant and oral presenter *Santa Fe, NM*

· `http://press3.mcs.anl.gov/santa-fe-cosmology-workshops/sf13-main/`
· Presentation: `http://prezi.com/ayvf8jzx3p9y/?utm_campaign=share&utm_medium=copy`.

Chicago Area Undergraduate Research Symposium March 2013
Oral Presenter *Chicago, IL*

· Event's website: `http://www.caurs.com/`
· Poster and Presentation to be found on my website, referenced on the first page's header.

AAS 221st Meeting January 2013
Participant and poster presenter *Long Beach, CA*

· `http://aas.org/files/resources/aas_221_program_book.pdf`

ICTP Summer School of Cosmology July 2012
Participant and poster presenter *Trieste, Italy*

· Poster can be found on my website, referenced on the first page's header.
· `http://cdsagenda5.ictp.trieste.it/full_display.php?ida=a11178`

ICTP Workshop on Large-Scale Structure July 2012
Participant *Trieste, Italy*

· http://cdsagenda5.ictp.trieste.it/full_display.php?ida=a11314

Chicagoland and Midwest 1-Day Dark Matter Workshop April 6^{th} 2012
Participant *Fermilab, Batavia, IL*

· http://www.hep.anl.gov/byrum/DM/ChicagolandDM.htm

APS April Meeting April 2012
Oral presenter *Atlanta, GA*

· Optimization of Type Ia Supernovae Selection, Photometric Typing, and Cosmology Constraints
· Talk: http://meetings.aps.org/Meeting/APR12/Event/169557