Dr Maria Vincenzi

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I work on Supernova Ia cosmology and I am currently the lead of the cosmological analysis of the Dark Energy Survey (DES) Supernova sample, which is the largest and deepest SN sample from single telescope currently available. This analysis involves approximately a team of twenty members of the DES Collaboration and it will result in the most precise measurement of the acceleration of the expansion of our Universe from SNe Ia. Starting September 2023, I'll be a <u>NASA Einstein fellow</u> at Duke University.

Education

2017 – 2021	**Ph.D. Physics**, Institute of Cosmology and Gravitation, Portsmouth, UK. Supervisors: Prof. Bob Nichol (University of Portsmouth), Prof. Mark Sullivan (University of Southampton) *My Ph.D. program was founded by the Data Intensive Science Centre in the South-East Physics Network (DISCnet, https://www.discnet.sussex.ac.uk). This was a four-year based program, it included training on Machine Learning and Data Science and internships with various industrial partners.*
2014 – 2017	**MSc in Astrophysics**, University of Milan, Milan, Italy. Grade: *Magna cum laude*
2010 – 2014	**BSc in Physics**, University of Milan, Milan, Italy. Grade: *106/110*

Research & Professional Experience

2021 Nov – *present*	**Postdoctoral position**, Duke University, Durham, NC, USA. Leading the cosmological analysis of the DES Supernova sample.
2021 Aug – Oct	**Postdoctoral position**, University of Southampton, Southampton, UK.
2019 Jun – Aug:	**Summer internship at Quant Foundry Limited**, London, UK I developed Machine Learning models for the estimation of probability of default of low-risk portfolios.
2017 Jan – Jun:	**Independent Contractor**, Lawrence Berkeley National Laboratory (LBNL), Berkeley (CA), USA I worked on the development of the data processing pipeline for the Nearby Supernova Factory.
2016 Mar – Dec:	**MSc thesis project**, LBNL, Berkeley (CA), USA I worked under the supervision of Nobel Laureate Prof. Saul Perlmutter on the data processing pipeline for the Nearby Supernova Factory.
2015 Jun – Aug:	**Leiden/ESA program for summer students**, Leiden, Netherlands 10-weeks program working on stellar and planetary systems formation with Dr Carlo Manara and Dr Christian Schneider. My work resulted in a poster presented at the conference "The accretion/outflow connection in young stellar objects" (Leiden, October 2015).
2014 Jan – Feb:	**BSc thesis project**, National Institute for Astrophysics (INAF), Milano, Italy I worked on galaxy clusters with Dr Silvano Molendi (INAF)

Prizes and scholarships

2022:   **Universities Research Association (URA) and Fermilab outstanding doctoral thesis award**

2022:   **Michael Penston Prize** for the best doctoral thesis in astronomy or astrophysics granted by the Royal Astronomical Society.

2016:   Scholarship to support my MSc Thesis at LBNL, granted by the Rotary Club of Modena and the University of Milan.

Collaborations

- 2023 – *present*: Euclid Consortium
- 2020 – *present*: The 4MOST Time Domain Extragalactic Survey (TiDES) Collaboration
- 2019 – *present*: LSST Dark Energy Science Collaboration
- 2019 – *present*: Dark Energy Survey Collaboration (**Builder status**)
- 2018 – 2021: Junior Associate in the LSST:UK Consortium
- 2016 – 2018: Nearby Supernova Factory

Talks and Seminars

Invited talks

2022 Jul: *SN Ia cosmology with photometric SN samples*, invited speaker at the BOOM! Conference at University of Illinois (Urbana-Champaign, USA)

2022 Jun: *SN Ia cosmology with the Dark Energy Survey*, speaker at the Fermilab User Meeting in occasion of the ceremony for the URA and Fermilab doctoral thesis award (Chicago, USA)

2021 Dec: *SN Ia cosmology with the Dark Energy Survey*, speaker at the University of Chicago KICP seminar series (Chicago, USA)

2021 Feb: *Core Collapse contamination in DES SN Ia cosmology*, Invited talk at the LSST Dark Energy Science Collaboration transient working group (Virtual)

2020 Oct: *Core Collapse contamination in SN Ia cosmology*, Invited talk at the Transient Tuesday seminar series at DARK (Copenhagen, DK)

2019 May: *Simulation of core collapse contamination in the LSST era*, Invited talk at LSST:UK Meeting, University of Cardiff (Cardiff, UK)

2019 Apr: *ML in the LSST era*, Invited talk at SciML seminar series at Rutherford Appleton Laboratory (Oxford, UK)

Talks on behalf of the DES Supernova working group

2023 Jan: *Cosmology with the DES-SN sample*, talk on behalf of the DES-SN working group, 241st American Astronomical Society Meeting (Seattle, WA).

2021 Jul: *Cosmology with the DES-SN sample*, talk on behalf of the DES-SN working group, National Astronomy Meeting 2021 (Bath, UK).

2021 Jan: *Cosmology with the DES-SN sample*, talk on behalf of the DES-SN working group, 237th American Astronomical Society Meeting (Virtual).

2019 Nov: SN working group update at the Plenary Session, DES Collaboration Meeting at University of Sussex (Brighton, UK)

Other talks and seminars

| 2019 Oct: | *Core Collapse contamination in SN Ia cosmology*, Supernova Cosmology Analysis Meeting, KICP (Chicago, USA) |
| 2018 Apr: | *Spectro-photometric templates of core collapse supernovae*, European Week of Astronomy and Space Science (Liverpool, UK) |

Mentoring, Teaching Experiences, Outreach & Public Engagement

2023:	Substitute for Introduction to Astronomy, Undergraduate level course at Duke University
2022:	Supervised Ava Bailey, an undergraduate student at Duke University, for a summer project on SN cosmology forecasts from LSST+Euclid. The project resulted in a publication (see list of Publications).
2021:	Co-supervised Ryan Camilleri, undergraduate student at the University of Queensland, for his Master thesis project.
2019:	Lecture on Machine Learning in Astronomy for Computer Science undergraduate students at the University of Portsmouth.
2018:	TA for the Computational Physics unit at the University of Portsmouth.
2017:	Private tutor in Physics to a class of ten undergraduate students in Mechanical Engineering at Camplus Residential College (Milan, Italy).

Outreach & Public Engagement

In 2019 and 2020, I was the Outreach and Public Engagement (OPE) student representative at the Institute of Cosmology and Gravitation. As a OPE student representative, I helped with the organisation of the Stargazing Event, an evening of activities and talks promoted every year by the ICG and attended by 1500 members of the public. I also organised several astronomy-related activities tailored for primary school kids and I presented these at various girl scout local groups to encourage engagement of girls in STEM.