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Research interests

- Time-domain stellar astrophysics; optical transients; supernovae: interacting, core-collapse, thermonuclear; Gap Transients: supernova impostors, stellar mergers, candidates Electron-Capture Supernovae.
- Electromagnetic domains: Near-Ultraviolet (NUV), Optical, Near-Infrared (NIR), Mid-Infrared (MIR).

Education

04/2019 – **Ph.D. in Astrophysics**, *Universidad Andres Bello (UNAB)*, Santiago, Chile, Supervisor: Dr. G. Pignata
06/2023 (UNAB), Co-supervisor: Dr. A. Pastorello (INAF-OAPd).

Thesis title: Exploring the final stages of massive stars through Type II_n Supernova precursors and LBV variability
In my PhD thesis I searched for precursor activity years before the explosion of a sample of 27 nearby Type II_n SNe. Then, I reconstructed decades-long light curves of a sample of 12 eruptive Luminous Blue Variables in the Local Group, looking for their eruptions. Finally, I compared the light curves of the precursors to those of the LBVs, to see if they are similar and therefore if LBVs are indeed good candidates as progenitors of SNe II_n. While the characteristics of the precursors and the LBV eruptions are different, I still found a few similarities, making the connection possible.

10/2016 – **M.Sc. in Astronomy**, *Padova University*, Padova, Italy, Advisors: Dr. S. Ciroi and Dr. A. Pastorello,
09/2018 *final remark - 110/110 cum Laude*.

Thesis title: The peculiar SN 2013gc: evidences of an eruptive phase before the explosion
In this thesis I analysed the interactive Type II_n SN 2013gc, its light curves and spectra. By looking at archival images taken a few years before the explosion, I found evidences of an eruptive phases from the progenitor, during which it expelled circumstellar material, with which the SN ejecta interacted after the explosion.

10/2013 – **B.Sc. in Astronomy**, *Padova University*, Padova, Italy, Advisors: Dr. S. Ciroi and Dr. M. Berton,
10/2016 *final remark - 101/110*.

Thesis title: Determinazione della massa del buco nero in un campione di FSRQ a redshift intermedio
In this thesis I studied a small sample of 9 flat-spectrum radio quasars at intermediate redshift, analysed their spectra from the SDSS survey and from them I calculated the masses of the supermassive black holes at their centres.

Languages knowledge

Native language **Italian**.

Second language **English**, Reading ability: Excellent; Writing ability: Good; Speaking ability: Good.

Third language **Spanish**, Reading ability: Basic; Speaking ability: Intermediate.

Employment history

07/2023 – **Postdoc**, "*Assegno di ricerca GRAWITA*", INAF-BRERA OBSERVATORY, Merate (LC), Italy.
present Advisor: Dr. P. D'Avanzo

08/2018 – **Formative stage**, INAF-PADOVA OBSERVATORY, Padova, Italy.
11/2018 Advisor: Dr. A. Pastorello

Publications summary

- Total: 47 refereed publications (5 as first-author), 9 submitted, 2 in preparation; >170 non-refereed publications; ~860 citations. H-index: 18.
- ADS public library URL: <https://ui.adsabs.harvard.edu/public-libraries/in38wuqjTi6q0-0ZzVnzQA>
- Google Scholar public URL: https://scholar.google.com/citations?user=Jw_zBMoAAAAJ&hl=it&oi=sra

Scientific Collaborations

- 07/2024 – now **Member of the Coordinamento Italiano Burst Ottici (CIBO) Collaboration.**
- 06/2024 – now **Junior Member of the International Astronomical Union (IAU).**
- 07/2023 – present **Member of the Electromagnetic counterparts of gravitational wave sources at the Very Large Telescope (ENGRAVE) Collaboration.**
- 07/2023 – present **Member of the GRAvitational Wave Inaf TeAm (GRAWITA) Collaboration**, *search and follow-up of electromagnetic counterparts of gravitational waves events.*
- 06/2022 – now **Member of the LSST Transients and Variable Stars (TVS) Science Collaboration.**
- 01/2020 – present **Associated to the Istituto Nazionale di Astrofisica (INAF) - Osservatorio Astronomico di Padova (OAPd).**
- 06/2019 – 06/2023 **Affiliated to the Chilean Millennium Astrophysical Institute (MAS).**
- 01/2018 – present **Member of the Public ESO Spectroscopic Survey for Transient Objects (PESSTO)**, *to study optical transients with the NTT telescope*, member of the interacting supernovae group, member of the Target Alert Team for 10 subruns.
- 12/2017 – present **Member of the NOT Unbiased Transient Survey (NUTS)**, *to study optical transients with the NOT telescope*, duties of sending triggers and reducing data.

Honors and awards

- 2018 **Mille e una lode**, *award for the student with the highest average exams score in the Academic year 2016-2017*, PADOVA UNIVERSITY, 1,000 EUR.

Scientific presentations

- 26/02/2024 **Scientific contributions of the telescopes of the Asiago Observatory**, *6th Chianti Topics – International Focus Workshop*, (contributed talk).
- 23/01/2024 **Precursors of Type IIn Supernovae in the era of LSST**, *What Was That? – Planning ESO Follow Up for Transients, Variables, and Solar System Objects in the Era of LSST*, (poster and lightning talk).
- 06/11/2023 **The double peaked light curve of SN 2016aiy**, *online Supervirtual conference 2023*, (poster).
- 21/09/2023 **The double-peaked light curve of the Type IIn SN 2016aiy**, *ePESSTO+ Meeting*, Warsaw Astronomical Observatory, Warsaw, Poland, (contributed talk).
- 07/09/2023 **A bunch of Type Ibn SNe followed with NUTS**, *3rd NUTS2 Meeting*, Osservatorio Astronomico di Padova, Padova, Italy, (contributed talk).
- 15/06/2023 **L'universo transiente al Copernico**, *Copernico @50 workshop*, Asiago, Italy, (contributed talk).
- 14/03/2023 **Reconstructing the historical light curves of Luminous Blue Variables**, *XVIII SOCHIAS Meeting*, Temuco, Chile, (contributed talk).
- 24/11/2022 **Linking SN impostors and Luminous Blue Variables**, *talk at the SN group meeting*, MPA, Garching, Germany.
- 08/11/2022 **Searching for precursor activity of Type IIn Supernovae**, *online Supervirtual conference 2022*, (contributed talk).
- 04/07/2022 **Linking SN impostors and Luminous Blue Variables**, *"Gap Transients: giant eruptions or stellar mergers?" workshop*, Sexten, Italy, (contributed talk).
- 13/04/2022 **SN 2021foa: a transitional 2009ip-like and Ibn event**, *South American Supernovae (SAS) 2022 workshop*, ESO@Vitacura, Santiago, Chile, (contributed talk).

- 15/11/2021 **Searching for precursor activity of Type IIⁿ Supernovae**, *online Supervirtual conference 2021*, (poster).
- 17/11/2020 **The candidate Electron-Capture SN 2018hwm**, *online NUTS2 Meeting II*, (contributed talk).
- 21/09/2020 **The fast rise of the peculiar SN 2018ivc**, *online ePESSTO Meeting*, (contributed talk).
- 18/10/2019 **The rise and fall of two peculiar type II events: SN 2018ivc and SN 2018hwm**, *4th NUTS Meeting*, Osservatorio Astronomico di Padova, Padova, Italy, (contributed talk).
- 08/06/2018 **Signatures of an eruptive phase before the explosion of the peculiar SN 2013gc**, *2018 ICYAA Conference*, Padova University, Padova, Italy, (contributed talk).

Participation at conferences, workshops, meetings (last 3 years)

- 26/09/2024 – **L'Eredità scientifica di Giuseppe "Bepi" Colombo**, *convegno*, Archivio Storico, Palazzo Bo, Padova, Italy.
27/02/2024
- 01/07/2024 – **2024 European Astronomical Society (EAS) Annual Meeting**, *conference*, Padova Congress Hall, Padova, Italy.
05/07/2024
- 25/06/2024 – **SOXS Consortium Science Meeting**, INAF - Osservatorio Astronomico di Capodimonte, Naples, Italy.
27/06/2024
- 26/02/2024 – **Use of small telescopes in the giant era II**, *Chianti Topics VI*, workshop, Complesso di Sant'Apollonia, Florence, Italy.
29/02/2024
consultable here: https://www.memsait.it/videomemorie/volume-1-2024/VIDEOMEM_1.2024.03.mp4
- 22/01/2024 – **What Was That? – Planning ESO Follow Up for Transients, Variables, and Solar System Objects in the Era of LSST**, *workshop*, ESO Headquarters, Garching bei München, Germany.
26/01/2024
- 06/11/2023 – **online Supervirtual conference 2023**, virtual conference on supernovae and related transients.
10/11/2023
- 23/10/2023 – **Anisotropies in core-collapse supernova explosions 2**, *conference*, Istituto Euro-Mediterraneo di Scienza e Tecnologia, Palermo, Italy.
26/10/2023
- 21/09/2023 – **ePESSTO+ Meeting**, Warsaw Astronomical Observatory, Warsaw, Poland.
22/09/2023
- 07/09/2023 – **3rd NUTS2 Meeting**, Osservatorio Astronomico di Padova, Padova, Italy.
08/09/2023
- 14/06/2023 – **Copernico @50**, *workshop*, organised by L. Tomasella, Asiago, Italy.
16/06/2023
consultable here: https://www.memsait.it/videomemorie/volume-3-2023/VIDEOMEM_3.2023.31.mp4
- 19/04/2023 – **Writing and communicating your science**, *workshop*, ESO@Vitacura, Santiago, Chile.
20/04/2023
- 13/03/2023 – **XVIII SOCHIAS Meeting**, *conference*, Temuco, Chile.
16/03/2023
- 07/11/2022 – **online Supervirtual conference 2022**, *From Common to Exotic Transients*, virtual conference on supernovae and related transients.
11/11/2022
- 04/07/2022 – **Gap Transients: giant eruptions or stellar mergers?**, *workshop*, Sexten, Italy.
08/07/2022
- 11/04/2022 – **South American Supernovae (SAS) 2022**, *workshop*, ESO@Vitacura, Santiago, Chile.
13/04/2022
- 15/11/2021 – **online Supervirtual conference 2021**, *From Common to Exotic Transients*, virtual conference on supernovae and related transients.
19/11/2021
- 03/10/2021 – **Scientific Communication in Astronomy**, *workshop*, Bertinoro, Italy.
08/10/2021

Recent observing time awarded (last 2 years)

- 10/2024 – **Telescopio Nazionale Galileo (TNG) 3.58m + DOLORES (30 hours) and Rapid Eye Mount**
03/2025 **(REM) 0.6m + ROS2+REMIR (30 hours)**, *1 semester in Period AOT50*, "Interacting transients as a key to decode the mysteries of stellar evolution", La Palma Observatory.
PI: G. Valerin
- 10/2024 – **REM 0.6m + ROSS2/REMIR (20+20 hours)**, *AOT50*, "REM contribution to the worldwide search
03/2025 for an electromagnetic counterpart of a gravitational wave trigger", La Silla Observatory.
PI: S. Campana
- 09/2024 – **GTC 10.4m + HIPERCAM (1.5 nights)**, *2024B*, "Identifying Progenitors of Core-Collapse Super-
02/2025 novae with HiPERCAM", La Palma Observatory.
PI: N. Elias-Rosa
- 07/2024 – **CAHA 3.5m + OMEGA2000 (12 hours), NOT 2.56m + ALFOSC (2 nights), LT 2m + IO:O**
01/2025 **(10 hours)**, *2024B*, "Determining the progenitor types of interacting supernovae", La Palma and Calar Alto Observatories.
PI: A. Reguitti
- 09/2024 – **LBT 2×8.2m + LUCI/MODS/LBC (24 hours)**, *2024B*, "Spectroscopic and photometric ToO
07/2025 follow-up of gravitational wave events", Mount Graham Observatory.
PI: A. Rossi
- 02/2024 – **Copernico 1.82m + AFOSC (2 nights/month), Schmidt 0.67m + Moravian (120 hours)**,
01/2026 *2 years Large Program*, "Monitoring peculiar stellar transients with the Asiago telescopes", Asiago Astrophysical Observatory.
PI: A. Reguitti
- 10/2023 – **ESO Very Large Telescope (VLT) 8.2m UT3 + X-Shooter (8 hours)**, *Period 112*, "The late
03/2024 time of strongly-interacting supernovae", Cerro Paranal Observatory.
PI: I. Salmaso
- 10/2021 – **Nordic Optical Telescope (NOT) 2.56m + ALFOSC and NOTCAM (65 hours/semester of**
present **soft ToO + 12 hours/semester of hard ToO with ALFOSC, 8 half-nights with NOTCAM)**,
"The local transient Universe", La Palma Observatory.
PI: E. Kankare, M. Stritzinger, P. Lundqvist
- 04/2019 – **ESO New Technology Telescope (NTT) 3.58m + EFOSC2 and SOFI (90 nights/semester)**,
present *Large Program*, "ePESSTO+: the (advanced) extended Public ESO Spectroscopic Survey of Transient Objects", La Silla Observatory.
PI: C. Inserra

On-site observational experiences

- 23/07/2024 **Copernico 1.82m + Echelle high-resolution spectrograph (1 night)**, *Asiago Astrophysical Observatory, Italy*, variable stars.
- 01/2020 – **Copernico 1.82m + AFOSC and Schmidt 0.67m + Moravian (22 nights and counting)**,
present *Asiago Astrophysical Observatory, Italy*, imaging and low-resolution spectroscopic observation of Gap Transients and interacting supernovae.
- 12/2017 – **Copernico 1.82m + AFOSC and Schmidt 0.67m + SBIG (9 nights)**, *Asiago Astrophysical*
04/2018 *Observatory, Italy*, imaging and spectroscopic observation of supernovae.
- 06/2016 **Galileo 1.22m + B&C (4 nights)**, *Asiago Astrophysical Observatory, Italy*, for practice in the use of a professional telescope, spectroscopic observation of quasars.

Technical and Computer skills

Processing pipelines of optical and near-infrared spectroscopic and photometric data, taken with Asiago telescopes (AFOSC, Moravian), NOT (ALFOSC), NTT (EFOSC2, SOFI), GTC (OSIRIS).

Data reduction: *Swift*, *GALEX* (NUV), *WISE*, *Spitzer*, *JWST* (MIR) space telescopes.

Operating Windows, Ubuntu, MacOS
Systems

Codes Python, Jupyter, LaTeX
language
Softwares SAO DS9, Aladin, IRAF, PyRAF, Photutils

Professional service

- 1-4/04/2025 **LOC Member**, *An extraordinary journey into the Transient Sky: from restless progenitor stars to explosive multi-messenger signals*, conference, Padova, Italy.
- 1-5/07/2024 **Volunteer**, *2024 EAS Annual Meeting*, conference, Padova, Italy.
- 06/2023 **LOC Member**, *Copernico @50*, workshop, Asiago, Italy.
- 10/2022-present **Journal referee**, *The Astrophysical Journal*, *Monthly Notices of the Royal Astronomical Society*, *Astronomy & Astrophysics*.
- 12/22-06/24 **TAC member**, *TNG/REM*, Semester AOT47 (2023A) and AOT50 (2024B).

Teaching experience

- 25/07/2023-26/07/2023 **Training** of 7 Physics MSc students from Trieste University on how to conduct an observing night with the Copernico 1.82m telescope + Echelle spectrograph, Asiago Astrophysical Observatory, Italy
- 21/07/2024-22/07/2024 **Training** of MSc student Elisa Bigongiari (UniPi) on how to use *daophot* to measure the magnitude of a stellar source, Asiago Astrophysical Observatory, Italy
- 04/02/2024-16/02/2024 **Tutor** of the 2023 NEON Observing School, Asiago Astrophysical Observatory, Italy
https://www2.mpia-hd.mpg.de/~korhonen/ORP_training/NEON2023/
- 21/07/2023-24/07/2023 **Training** of PhD students Beth Fitzpatrick and Robert Byrne (UCD) on how to conduct an observing run at a professional telescope, Asiago Astrophysical Observatory, Italy
- 20/07/2022 *Transienti, Novae e Supernovae*, lecture at the ASYAGO Summer School 2022, Asiago, Italy

Outreach Activity

- 19/04/2024 Activity of divulgation ("divulgazione") to a children school, Asiago Astrophysical Observatory, Italy
- 29/01/2024 **I buchi neri**, *educational colloquium*, Scuola Superiore (High School) G. Perlasca, Idro, Italy.
- 11/11/2023 **I buchi neri**, *public colloquium*, Agnosine municipality, Italy.
- 04/11/2023 **Il Telescopio Spaziale James Webb**, *public colloquium*, Lanificio Conte, Schio, Italy.
- 14/10/2023 **Il Sistema Solare**, *public colloquium*, Agnosine municipality, Italy.
- 29/09/2023 **European Researchers Night**, *oral presentation of the Asiago Schmidt telescope*, organised by S. Zaggia, INAF-Osservatorio Astronomico di Padova, Italy.
- 16/01/2023 **Il Telescopio Spaziale James Webb**, *educational colloquium*, Scuola Superiore (High School) G. Perlasca, Idro, Italy.
- 26/11/2022 **Costellazioni e mitologia**, *public colloquium*, Agnosine public library, Italy.
- 12/11/2022 **Il Telescopio Spaziale James Webb**, *public colloquium*, Agnosine public library, Italy.
- 30/09/2022 **European Researchers Night**, *oral presentation of the Asiago Schmidt telescope*, organised by S. Zaggia, INAF-Osservatorio Astronomico di Padova, Italy.
- 19/10/2021 **I colori del cielo**, *colloquium within the series of webinars 'A spasso tra le stelle'*, organised by F. Manzini, Tradate Astronomical Observatory, Italy.
- 24/09/2021 **European Researchers Night**, *oral presentation of the Asiago Copernico 1.82m telescope*, organised by S. Zaggia, INAF-Osservatorio Astronomico di Padova, Italy.
- 08/09/2021 **A spasso tra le galassie**, by "comunicazione oapd" for the *European Researchers Night*, Youtube interview, organised by C. Boccato.
- 12/2020 – 07/2024 **ASYAGO Schools**, for high-school students, participation as a 'tutor', both online and in-person. Asiago Astrophysical Observatory, Italy
- 09/05/2016 **TransitodiMercurio: il disco solare nella sua interezza (H-alfa)**, *Youtube broadcast on occasion of the 2016 Mercury transit in front of the Sun*, organised by G. Umbriaco, Asiago Astrophysical Observatory, Italy.