

Erika Korb

PhD student in Astrophysics | University of Padua

📍 Venice, Italy

@ erika.korb.astro@gmail.com 📧 [erikakorb](#) 📄 [erikakorb](#)

🔗 <https://erikakorb-website-welcome-9etk7i.streamlit.app/>

🎓 EDUCATION

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| NOW | PhD in Astrophysics, University of Padua |
| OCT 2022 | Thesis: <i>Binary compact object populations</i> Supervisor: Prof. Michela Mapelli <ul style="list-style-type: none">▶ With the stellar evolution software MESA, I study the correlation between stellar structure and mass transfer efficiency. I aim to extract fitting-formulae and tables that can be implemented by population-synthesis codes, allowing for more realistic simulations and contributing to the science case for Einstein Telescope. 🔗 MESA 🔗 Einstein Telescope |
| SEP 2022 | Master in Astrophysics and Cosmology, University of Padua |
| OCT 2020 | Thesis: <i>Wolf-Rayet – black hole binaries as progenitors of binary black holes</i> Supervisor: Prof. Michela Mapelli; Co-Supervisor: Prof. Giuliano Iorio Grade: 110/110 cum laude <ul style="list-style-type: none">▶ I used the SEVN population-synthesis code to study binaries hosting a Wolf-Rayet star and a black hole. I investigated their role as progenitors of merging binary black holes, comparing my results to the observed properties of Cyg X-3. 🔗 SEVN 📄 Thesis PDF 📧 erikakorb/masterthesis |
| SEP 2020 | Bachelor in Astronomy, University of Padua |
| OCT 2017 | Thesis: <i>Impact of mass transfer efficiency on the formation of binary compact objects</i> Supervisor: Prof. Michela Mapelli; Co-Supervisor: Prof. Giuliano Iorio Grade: 110/110 cum laude <ul style="list-style-type: none">▶ By means of numerical simulations with the SEVN code, I studied the impact of mass transfer processes on the formation of binary compact objects, focusing on binaries merging via gravitational wave emission. 🔗 SEVN 📄 Thesis PDF |
| JUL 2017 | Scientific High School “G.B. Benedetti”, Venice |
| SEP 2012 | Final project: <i>The Pleiades</i> Grade: 100/100 cum laude <ul style="list-style-type: none">▶ I calculated the distance of the Pleiades open cluster with the parallax method. |



🏆 AWARDS AND PRIZES

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| 2020 | Mille e una lode by the University of Padua 🔗 Website <ul style="list-style-type: none">▶ I was in the 3% of students with the highest average grade in my bachelor. For this, I received a 1 k€ scholarship for a 250 hours internship; I included it in my master thesis work. |
| 2016 | Il cielo come laboratorio by the University of Padua 🔗 Website |
| 2015 | <ul style="list-style-type: none">▶ I was selected (23% of candidates, regional selection) for a three-days stage at the Asiago observatory (Italy) to analyze photometric and spectroscopic data in teams of 2-3 people. |

👤 TEACHING

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| APR-JUN 2023 | Laboratory of Computational Physics (Mod B.) <i>University of Padua, Master in Physics of Data</i> | Teaching assistant |
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SCHOOLS

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| 28 AUG-1 SEP 2023 | MESA Summer School 2023, Konkoly Observatory, Budapest  Website <ul style="list-style-type: none">› I will improve my knowledge of the MESA stellar evolution software.› Teachers: J. Klencki, J. Tayar, L. Bugnet, M. G. Pedersen, M. Joyce, R. Smolec |
| 3-7 OCT 2022 | 3rd Astrostatistics School, INAF Brera, Milan  Website <ul style="list-style-type: none">› I used the JAGS software to apply Bayesian statistics in the astrophysical context.› Teacher: S. Andreon |



PUBLICATIONS ACCEPTED

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| CO-AUTHOR | Compact object mergers: exploring uncertainties from stellar and binary evolution with SEVN Giuliano Iorio, Michela Mapelli, Guglielmo Costa, Mario Spera, Gastón J. Escobar, Cecilia Sgalletta, Alessandro A. Trani, Erika Korb , Filippo Santoliquido, Marco Dall’Amico, Nicola Gaspari, Alessandro Bressan <i>2023, MNRAS</i>  arxiv.org/abs/2211.11774  gitlab.com/sevncodes/sevn |
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CONFERENCES & TALKS

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| 26-30 JUN 2023 | The Renaissance of Stellar Black-Hole Detections in The Local Group <i>Lorentz Center, Leiden</i> Poster presentation |
| 21-22 APR 2023 | Spring Workshop on Physics of Data <i>AI Society - University of Padua, Venice</i> Invited talk |
| 4-5 AUG 2022 | Post-PAX meeting <i>Harvard-Smithsonian Center for Astrophysics, Boston</i> Poster presentation (online) |

OUTREACH

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| MAY 2023 NOV 2022 | Science from the Islamic world to today’s Europe, Padua  Website <ul style="list-style-type: none">› I contributed to the creation of new outreach projects for the “Giovanni Poleni” Physics Museum of Padua, focusing on the communication of the scientific research and teaching practices brought from the Islamic world to today’s Europe. The projects were developed by mixed working-groups, involving PhD students and members of Padua foreign communities. |
| 16 JUL 2019 | Telescope observations open to the general public, Padua  Website <ul style="list-style-type: none">› I collaborated with the amateur astronomers of Padua, using their telescopes to illustrate celestial objects in the public event organized for the partial lunar eclipse. |

MEMBERSHIPS & COLLABORATIONS

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| 2022 - NOW | LISA - Associate member of the Laser Interferometer Space Antenna consortium  Website |
| 2022 - NOW | ET - Member of the Einstein Telescope collaboration  Website |
| 2022 - NOW | TEONGRAV - Member of the Theory of Gravitational Wave Sources collaboration  Website |
| 2022 - NOW | INFN - Affiliated to the Italian Institution for Nuclear Physics; Section of Padua  Website |
| 2020 - NOW | DEMOBLACK - Member of the ERC-funded research group led by Michela Mapelli  Website |

€ FUNDINGS

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| 2021 | PRIN (577.5 k€ for 3 years) By: MIUR (Italian Minister for Education, University and Research) Title: <i>Multimessenger astronomy in the Einstein Telescope Era (METE)</i> |
| Co-I | PI: Marica Branchesi; co-PIs: Enrico Cappellaro, Michela Mapelli, Michele Punturo > Success rate: 9.5%. Covers most of my PhD expenses |

</> SOFTWARE SKILLS

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| ADVANCED | Python (e.g., <i>Numpy</i> , <i>Matplotlib</i> , <i>Pandas</i> , <i>Dask</i> , <i>Scipy</i> , <i>Regex</i> , <i>Streamlit</i> , <i>Altair</i> ; Jupyter, IDLE), L ^A T _E X (TeXstudio, Overleaf), Slurm (Queue scheduler for HPC), Git, Linux, Windows, SEVN (Population-synthesis code), MESA (Stellar evolution software) |
| INTERMEDIATE | Markdown, Bash, Inkscape/GIMP (Graphics) |
| BASIC | C++, JAGS (Gibbs sampler), SAOImage DS9, TOPCAT |

🌐 LANGUAGES

| | A1 | A2 | B1 | B2 | C1 | C2 | |
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| ITALIAN | ● | ● | ● | ● | ● | ● | (native) |
| ENGLISH | ● | ● | ● | ● | ● | ○ | |
| GERMAN | ● | ● | ○ | ○ | ○ | ○ | |