

Erika Korb

PhD student in Astrophysics | University of Padua

📍 Venice, Italy

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🎓 EDUCATION

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">➤ I study the correlation between stellar structure and mass transfer efficiency, simulating stellar and binary processes with the stellar evolution software MESA. 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: Dr. Giuliano Iorio Grade: 110/110 cum laude <ul style="list-style-type: none">➤ I studied binaries hosting a Wolf-Rayet star and a black hole, investigating their role as progenitors of merging binary black holes. I evolved the systems with the population synthesis-code SEVN, and compared 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: Dr. Giuliano Iorio Grade: 110/110 cum laude <ul style="list-style-type: none">➤ I studied the impact of mass transfer processes on the formation of binary compact objects. I focused my analysis on the binaries merging via gravitational wave emission, generating mock populations by means of numerical simulations with the SEVN code. 🔗 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

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, 2015	Il cielo come laboratorio by the University of Padua 🌐 Website <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

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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SCIENTIFIC SUPERVISOR

CO-SUPERVISOR	Juan Manuel Pacheco Arias (110/110 cum laude) <i>Hydrodynamical simulations of massive stars collisions</i>	2023  Master Thesis
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SCHOOLS

28 AUG-1 SEP 2023	MESA Summer School 2023, Konkoly Observatory, Budapest ✦ I improved my knowledge of the MESA stellar evolution software. ✦ Teachers: J. Klencki, J. Tayar, L. Bugnet, M. G. Pedersen, M. Joyce, R. Smolec	 Website
3-7 OCT 2022	3rd Astrostatistics School, INAF Brera, Milan ✦ I used the JAGS software to apply Bayesian statistics in the astrophysical context. ✦ Teacher: S. Andreon	 Website




PUBLICATIONS ACCEPTED

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, 524, 426</i>  ui.adsabs.harvard.edu/abs/2023MNRAS.524..426I/abstract  gitlab.com/sevncodes/sevn
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CONFERENCES & TALKS

26-30 JUN 2023	The Renaissance of Stellar Black-Hole Detections in The Local Group <i>Lorentz Center, Leiden</i> Talk (participation only upon invitation)
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

29 SEP 2023	European Researcher’s Night - Science4All, Padua ✦ I explained my work as a researcher to the general public. I gave a talk (<i>Olive Ascolane Stellari</i>) about my research topic and introduced families and kids to the science world.	 Website
JUN 2023 NOV 2022	Science from the Islamic world to today’s Europe, Padua ✦ 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.	 Website
16 JUL 2019	Telescope observations open to the general public, Padua ✦ 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.	 Website

MEMBERSHIPS & COLLABORATIONS

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

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> PI: Marica Branchesi; co-PIs: Enrico Cappellaro, Michela Mapelli, Michele Punturo ▶ Success rate: 9.5%. Covers most of my PhD expenses
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SOFTWARE SKILLS

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++, Fortran90, JAGS (Gibbs sampler), SAOImage DS9, TOPCAT, Olive (video editing)

LANGUAGES

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