

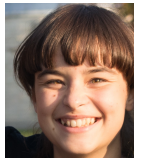
Erika Korb

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

Languages: Italian (native), English (C1), German (A2)



Co-developer and maintainer of the **SEVN** open-source population-synthesis code.

With this tool, I investigate the formation channels of stellar binaries via numerical simulations.

EDUCATION

SEP 2025	PhD student in Astrophysics, University of Padua	Expected defence: Dec 2025
OCT 2022	Thesis: <i>Binary compact object populations</i> Supervisor: Prof. Giuliano Iorio; Co-Supervisor: Prof. Michela Mapelli, Prof. Giovanni Carraro	
SEP 2022	Master in Astrophysics and Cosmology, University of Padua	110/110 cum laude
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	
SEP 2020	Bachelor in Astronomy, University of Padua	110/110 cum laude
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	

VISITING RESEARCHER

ONGOING	University of Heidelberg - Institute for Theoretical Astrophysics (ITA-ZAH)
MAR 2024	Host: Prof. Michela Mapelli

SCHOOLS

OTT 2024	MWGaiaDN School: Frontiers of Stellar Evolution, INAF-OAPD (online)	Website
JULY 2024	Astrostatistics Summer School, University of Crete, Heraklion	Website
AUG 2023	MESA Summer School 2023, Konkoly Observatory, Budapest	Website
OCT 2022	3rd Astrostatistics School, INAF Brera, Milan	Website
	› Gaia catalogue, galactic surveys, population synthesis tools for stars (e.g. Trilegal code)	
	› Machine and Deep Learning, Simulation Based Inference, MCMC, Optimization (Python)	
	› MESA stellar evolution software. Binary and asteroseismology tutorials.	
	› Bayesian statistics applied to the astrophysical context (JAGS software)	

TEACHING EXPERIENCE

APR-JUN 2024	Laboratory of Computational Physics (Mod B.)	Teaching assistant
APR-JUN 2023	<i>University of Padua, Master in Physics of Data</i> (Prof. Giuliano Iorio)	24 h.
	› Machine learning and optimization techniques with Python for astrophysical simulations	
OCT-FEB 23/4	The sky as a laboratory	Main teacher
	<i>High School “Benedetti-Tommaseo”, Venice</i>	16 h.
	› Outreach course to introduce astrophysics to high school students	

SOFTWARE SKILLS



ADVANCED	Python (<i>Numpy, Matplotlib, Seaborn, Plotly, Pandas, Dask, Polars, Scipy, Sklearn, Pytorch, Keras, Tensorflow, Emcee, RegEx, Streamlit, Altair</i> ; Jupyter, IDLE), L ^A T _E X (TeXstudio, Overleaf), Slurm (Queue scheduler for HPC), Conda, Git, Linux, Windows, SEVN (Population-synthesis; C++), MESA (Stellar evolution)
INTERM.	C++, Fortran90, Markdown, Bash, Stellarium (scripting plugins for outreach), Inkscape/GIMP (Graphics)
BASIC	SIMBAD, NED, ALADIN, SAOImage DS9, TOPCAT, JAGS (Gibbs sampler), Olive (video editing)

CONFERENCES & TALKS

PANELIST	Gravitational Wave Snowballs (Workshop) - <i>Sexten Center for Astrophysics</i> , Sexten	Jan 2025
INVITED	IGR Student Seminar - <i>Institute for Gravitational Research</i> , Glasgow (online)	Jun 2025
	Heraeus Summer School - <i>Friedrich Schiller Universität Jena</i> , Jena	Sep 2024
	Astrometing INAF-OACN (“Geppina Coppola” prize) - <i>INAF - OACN</i> , Naples	Nov 2023
	Spring Workshop on Physics of Data - <i>AI Society - University of Padua</i> , Venice	Apr 2023
CONTRIB.	EAS 2025 (2 talks) - <i>University College</i> , Cork	Jun 2025
	Stars II: current challenges, upcoming solutions - <i>CNR Research Area</i> , Bologna	Jun 2025
	XV Einstein Telescope Symposium - <i>CNR Research Area</i> , Bologna (online)	May 2025
	Galaxy Coffee - <i>Max Planck Institute for Astronomy</i> , Heidelberg	Mar 2025
	National Congress on Compact Objects (CNOC XIII) - <i>INAF-OAC</i> , Alghero	Sep 2024
	1st TEONGRAV workshop - <i>Sapienza University of Rome</i> , Rome	Sep 2024
	41st LIAC: The eventful life of massive star multiples - <i>Université De Liège</i> , Liège	Jul 2024
	The Renaissance of Stellar Black-Hole Detections - <i>Lorentz Center</i> , Leiden	Jun 2023
POSTERS	59th Rencontres de Moriond - Gravitation - <i>Rencontres de Moriond</i> , La Thuile	Apr 2025
	360° Approach to Common Envelope Evolution - <i>ICCUB</i> , Barcelona (online)	Jun 2024
	Post-PAX meeting - <i>Harvard-Smithsonian Center for Astrophysics</i> , Boston (online)	Aug 2022
ATTENDED	First ACME workshop - <i>ACME Center</i> , Toulouse (online)	Apr 2025
	EAS 2024 - <i>Padova Congress</i> , Padua	Jul 2024
	Machine Learning 4 Astrophysics (Workshop) - <i>Studio Villa Bosch</i> , Heidelberg	Jun 2024
	Spring Workshop on Physics of Data - <i>AI Society - University of Padua</i> , Venice	Apr 2022

PUBLICATIONS




FIRST-AUTHOR	Wolf-Rayet – compact object binaries as progenitors of binary compact objects Korb E. , Mapelli M., Iorio G., Costa G., Dall’Amico M. Mar 2025 - <i>A&A</i> , 695, A199 doi.org/10.1051/0004-6361/202452585
CO-AUTHOR	Metal-poor single Wolf-Rayet stars: the interplay of optically thick winds and rotation Boco L. et al. (incl. Korb E.) Jun 2025 - <i>Submitted to A&A</i> arxiv.org/abs/2507.00137
	Impact of accretion-induced chemically homogeneous evolution on stellar and compact binary populations Dall’Amico M. et al. (incl. Korb E.) Mar 2025 - <i>A&A</i> , 695, A221 doi.org/10.1051/0004-6361/202453543
	The boring history of Gaia BH3 from isolated binary evolution Iorio G. et al. (incl. Korb E.) Oct 2024 - <i>A&A</i> 690, A144 doi.org/10.1051/0004-6361/202450531
	Compact object mergers: exploring uncertainties from stellar and binary evolution with SEVN Iorio G. et al. (incl. Korb E.) Sep 2023 - <i>MNRAS</i> 524, 426 doi.org/10.1093/mnras/stad1630
PROCEEDING	Compact objects with Wolf-Rayet companions: a key binary configuration to produce gravitational wave mergers Korb E. Dec 2024 - <i>Bulletin de la Société Royale des Sciences</i> , 93, 3, 363-373 <i>Contribution to 41st LIAC conference</i> doi.org/10.25518/0037-9565.12414

ET COLLAB.	The Science of the Einstein Telescope (ET blue book) Einstein Telescope collaboration (incl. Korb E.) Mar 2025 - <i>Non refereed</i>	 arxiv.org/abs/503.12263
LISA UCBCG	BinCodex. LISA BPS Common Output Format v. 1.1.0 Valli R., Graziani L., and the LISA Synthetic UCB Catalogue Group (incl. Korb E.) Apr 2024 - <i>Non refereed</i>	 arxiv.org/abs/2311.03431

REVIEWER EXPERIENCE

APJS	Astrophysical Journal Supplement Series	Articles reviewed: 1
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PRIZES AND GRANTS

2024	Fondazione Gini Scholarship by the Fondazione Aldo Gini › 4600 € scholarship to support a 6 months STEM research project in Heidelberg.	 Website
2023	Geppina Coppola Prize by the Geppina Coppola Association, INAF-OACN › 1500 € prize for best master thesis in astronomy in Italy ($\sim 2.5\%$ success rate). 2 invited talks.	 Website
2020	Mille e una lode by the University of Padua › 1000 € scholarship awarded to the $\leq 3\%$ of students with the highest average grade in my bachelor.	 Website

MENTORING EXPERIENCE

MASTER	Juan Manuel Pacheco Arias - <i>Hydrodynamical simulations of massive stars collisions</i>	2023
BACHELOR	Alberto Casellato - <i>Study on the effect of mass transfer stability on binary black hole properties</i>	2024

OUTREACH

PHYSICS MUSEUM	Museum guide , Physics museum “Giovanni Poleni”, Padua › Guide at the physics museum of historical (18-19-20th century) scientific instruments. Project “Science from the Islamic world to today’s Europe” › Communicating scientific researches and teaching practices brought from the Islamic world.	Oct 2023 - Ongoing Nov 2022 - Jun 2023
FESTIVAL ACTIVITIES	Activity designer and facilitator for multisensorial astronomical festivals , Castellaro Lagusello › Light pollution activity (published soon) › Astrolabe activity: https://play.inaf.it/caccia-al-ladro-fra-le-stelle/ Facilitator at European Researcher’s Night - Science4All , Padua › Facilitator in the hand-on activity “Cartoline Stellari”, to introduce kids to constellations. Activity designer and facilitator for the “Girl’s Day” , Heidelberg › Gravitational wave-themed activity for the Girl’s Day event in Heidelberg. Facilitator with amateur astronomers , Padua	Jan - Jun 2025 Feb - Jun 2024 Sep 2024 2024, 2025 Jul 2019
LECTURE COURSES	Main teacher of the course “The sky as a laboratory” , Venice › University-orientation course in scientific subjects to high school students, with final exam. Lecture on “Science and mythology of constellations” , Venice › Linking constellation’s mythology and astronomical phenomena with an ad-hoc scripted <i>Stellarium</i> plugin.	Oct 2023 - Feb 2024 Mar 2023
PUBLIC TALKS	Research activity presentations to the general public › To the amateur astronomers of Treviso (Italy) › For the “Geppina Coppola” prize at INAF-OACN, Naples › For the European Researcher’s Night - Science4All in Padua	Jan 2025 Nov 2023 Sep 2023