



Tobia Matcovich

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EDUCATION AND TRAINING

01/11/2024 – CURRENT Perugia, Italy
PHD IN PHYSICS Università degli Studi di Perugia

01/10/2019 – 29/09/2022 Perugia, Italy
MASTER'S DEGREE IN PHYSICS - CURRICULUM IN "PARTICLE PHYSICS" Università degli Studi di Perugia

Address Via Alessandro Pascoli, 06123, Perugia, Italy | **Website** <http://www.fisica.unipg.it/fisgejo/index.php/it/> |

Field of study Gravitational Waves and astroparticles in the new frame of Multimessenger physics, Usage of different python tools: pyCBC, Bilby, GWpy, afterglowpy and naima for data analysis

Final grade 110/110

Thesis " Estimation of detection probabilities of Gamma Ray Burst and Gravitational Waves multimessenger events produced by disruptive binary mergers "

01/10/2014 – 20/02/2019 Perugia, Italy
BACHELOR'S DEGREE IN PHYSICS Università degli Studi di Perugia

Address Via Alessandro Pascoli, 06123, Perugia, Italy | **Website** <http://www.fisica.unipg.it/fisgejo/index.php/it/> |

Final grade 110/110 **Thesis** "Three-body forces in nuclear physics"

14/09/2009 – 03/07/2014 Perugia, Italy
SCIENTIFIC HIGH SCHOOL DIPLOMA Liceo statale Galileo Galilei, Perugia, Italy

Address Viale Carlo Manuali 12, 06122, Perugia, Italy | **Final grade** 100/100

WORK EXPERIENCE

01/03/2023 – 31/10/2024 Perugia, Italy
TECHNOLOGY RESEARCH FELLOWSHIP

INFN (Istituto Nazionale di Fisica Nucleare) section of Perugia

I spent my research fellowship in the field of gravitational wave astrophysics as a member of the international Ligo-Virgo-Kagra (LVK) collaboration. I worked on two main research projects. The first involves software development and data management for the GLADenet web tool we developed in Perugia. This tool aims to provide the completeness coefficient of the GLADE galaxy catalog to enhance observational campaigns targeting the detection of electromagnetic counterparts to gravitational waves produced by coalescences of compact objects. The second project focuses on the study of Black Hole-Neutron Star (NSBH) mergers using a multimessenger approach. This involves examining the conditions under which NSBH mergers generate detectable electromagnetic counterparts with current and future telescopes.

The following is a brief list of other activities carried out:

- Multiple Virgo Week meeting participation as a member of LVK collaboration.
- Multimessenger astrophysics using Ligo-Virgo data.
- Internal tasks for LVK low-latency group about sky localization probability maps.
- Level-0 shifter for Observing run 4 of LVK collaboration.

- Study of NSBH disruptive binary mergers from a multimessenger perspective and their future detectability.

● PUBLICATIONS

2024

[GLADEnet: A progressive web app for multi-messenger cosmology and electromagnetic follow-ups of gravitational-wave sources](#)

M. L. Brozzetti et Al. , A&A Volume 684, April 2024

● CONFERENCES AND SEMINARS

25/02/2025 – 28/02/2025 DESY - Zeuthen (Berlin)

Speaker in the "Workshop on Numerical Multi Messenger Modeling"

Title of the presentation: "Black hole-neutron star (NSBH) coalescence events"

Link <https://indico.desy.de/event/46887/timetable/#20250227.detailed>

09/10/2024 – 11/10/2024 Centro Polifunzionale Studenti, Bari, Italy

Speaker in the "Fifth Gravi-Gamma Workshop: The multimessenger view of the black hole life cycle"

Title of the presentation: "Estimation of joint detection probabilities of Gamma-Ray Burst and Gravitational Waves produced by NSBH binary mergers"

Link <https://agenda.infn.it/event/38056/timetable/#20241009.detailed>

30/09/2024 – 02/10/2024 Dipartimento di Sociologia e Ricerca Sociale, Università di Trento

Speaker in the "GRAvitational-waves Science&technology Symposium (GRASS 2024)"

Title of the presentation: "Estimation of joint detection probabilities of Gamma-Ray Burst and Gravitational Waves produced by NSBH binary mergers"

Link <https://agenda.infn.it/event/40538/timetable/#20241001.detailed>

06/05/2024 – 10/05/2024 MECC (Maastrichts Expositie en Congres Centrum) and Saint Jan's church, Maastricht, Netherlands

Poster presentation at the XIV ET Symposium

Poster title: "Estimation of joint detection probabilities of Gamma-Ray Burst and Gravitational Waves produced by NSBH binary mergers"

Link <https://indico.ego-gw.it/event/710/sessions/791/#20240507>

05/02/2024 – 09/02/2024 EGO, Cascina, Italy

Speaker in the Virgo Week-collaboration meeting

Title of the presentation: "Electromagnetic follow-ups of gravitational-wave sources in GLADEnet: a progressive web app"

Link <https://indico.ego-gw.it/event/704/>

23/10/2023 – 27/10/2023 Palazzo Franchetti of the "Istituto Veneto di Scienze, Lettere ed Arti", Venice, Italy

Attendance at the "XX International Workshop on Neutrino Telescopes"

Link <https://agenda.infn.it/event/33107/overview>

04/10/2023 – 06/10/2023 Gran Sasso Science Institute, Viale Francesco Crispi, 7 67100 L'Aquila (AQ), Italy

Speaker in the: "The Fourth Gravi-Gamma-Nu Workshop - Multiwavelength to Multimessenger: the new Sight of the Universe"

Title of the presentation: "GLADEnet: a progressive web app for multi-messenger cosmology and electromagnetic follow-ups of gravitational-wave sources"

Link <https://agenda.infn.it/event/35705/timetable/#20231005.detailed>

Title of the presentation: "Estimation of detection probabilities of Gamma-Ray Burst and Gravitational Waves multimessenger events produced by disruptive binary mergers".

Link <https://agenda.infn.it/event/30884/page/6384-venue>

● **SCHOOLS**

23/07/2017 – 27/07/2017
NI Summer School 2017

Università degli Studi di Pisa-INFN, Italy Main subject / occupational skills covered : Summer School in Nuclear physics with the title "Rewriting Nuclear Physics Textbooks: Basic nuclear interactions and their link to nuclear processes in the cosmos and on earth"

● **LANGUAGE SKILLS**

Mother tongue(s): **ITALIAN**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
ENGLISH	C1	C1	B2	B2	B2

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

● **TECHNICAL SKILLS AND COMPETENCES**

Computer skills

Good programming skills using Python and basic skills using C++. Good knowledge of Python tools and libraries specific to gravitational waves mulimessenger astrophysics such as pyCBC, Bilby, afterglowpy, GWpy, Naima, and Mopy. Software development for the analysis of gravitational and cosmological data. Technical support for online software that runs a data analysis web page.

● **COMMUNICATION AND INTERPERSONAL SKILLS**

Skills developed during the ongoing research grant

Over the past two years, I have learned to effectively organize scientific work within a research group, plan objectives, and allocate tasks. I am also gaining insights into how research integrates into a broader network of international collaboration. These experiences have underscored the importance of teamwork in achieving significant scientific results and enhancing efficiency.

