Ruggero Valli - Curriculum Vitae

date of birth:	27/05/1998
location:	Munich, Germany
cell:	+39 3279163934
email:	ruvalli@mpa-garching.mpg.de

Research Interests

I am interested in binary stellar populations, massive stars, low metallicity and Population III stars. I also study the formation of binary black holes as a source of gravitational wave transients. I use MESA as well as rapid population synthesis codes such as BSEEMP.

Education

10 Oct 2022 – present: PhD student at the *Max Planck Institute for Astrophysics*, supervisor: Selma de Mink.

Sep 2020 – 28 Sep 2022: MSc degree in astrophysics at *Sapienza University of Rome*, with a grade of 110/110 with honors.

Sep 2017 - 27 Sep 2020: BSc degree in physics at *Sapienza University of Rome*, with a grade of 110/110 with honors.

Sep 2012 – Jul 2017: Studied at *Liceo Scientifico A. Righi,* an historical scientific high school in Rome. Final exam grade: 100/100.

Schools and Conferences:

31 Oct - 25 Nov 2022: attended the MIAPbP topical workshop *The fundamental role of stellar multiplicity in stellar dynamics and evolution* in Garching (Munich)

08-12 Aug 2022: attended the MESA Summer School in Santa Barbara (US)

09-12 Nov 2021: attended the course "Introduction to Fortran for Scientific Computing" held by *CINECA*.

Feb 2018 – May 2018: attended the Cyber Challenge: a course about cybersecurity, cryptography and malware analysis.

Research Experience

Bachelor thesis (summer 2020): Analysis of the output of the GAMESH galaxy formation model (Graziani et al., 2020, MNRASL), to determine observability in the EM spectrum of the formation sites of the stellar black hole binaries detected by LIGO/Virgo through gravitational waves.

Astrophysics Lab Project (spring 2021): Characterization of the properties of a microwave telescope with a Cross-Dragone configuration and comparison to a single reflector configuration. The analysis was carried using the commercial software products HFSS and GRASP.

Computational Lab Project (winter 2021): Implementation of numerical methods to solve ordinary differential equation systems. Applications to dynamical gravitational systems.

Master thesis (Mar-Sep 2022): Constraining Population III star formation and evolution with gravitational wave observations: predictions for the properties of the population of merging binary black holes with Population III stellar progenitors by coupling the GAMESH galaxy formation model (Graziani et al., 2020, MNRASL) with the binary population synthesis code BSEEMP (Tanikawa et al. 2021, ApJ)

Skills

Knowledge of Physics and Astrophysics

Languages spoken:

- Italian: native speaker
- English: CAE level C2 certified in 2017, IELTS grade 8.0 in 2019

Programming languages known (from most to least familiar):
Python, C/C++, Fortran, Matlab, R, Assembly x86 and x64

Intermediate knowledge of machine learning (Tensorflow/Keras)

Arduino

Scholarships and Honors

2022: completed Sapienza Excellence Program alongside the MSc.

2017-2022: every year of university, have earned the university taxes Exemption for Meritorious Students.

2018: completed Sapienza Excellence Program alongside the BSc.

2014-2017: was a member of the school's team for the Mathematical Olympiad.

2016: Honorable mention at the final competition of the Italian Mathematical Olympiad.

2016: participated in the First Lego League as coach of team A.C.M.E., which won the Inspirational Award at the European Championship in Tenerife.

2012 -2020: was member of *AISTAP* (Italian Association for Gifted and Talented Students)

Hobbies

Trekking and Hiking: Member of CAI (Italian Alpine Club) since 2010, co-founder of the Juniores group of the CAI section of Rome, sectional guide of the Juvenile group.

Speleology: cave survey and exploration

Brown belt in Karate Wado-Ryu.

Work Experience

Worked as an Italian dubbing actor in movies, tv series and audio-books. An incomplete list of works can be found on https://www.antoniogenna.net/doppiaggio/voci/vocirvalli.htm