Europass
Curriculum Vitae

Personal information

Name / Surname	**Matteo Teodori**
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Nationality	Italian

Research experiences

Dec. 2022 - Now	**PhD student at University of Campania "Luigi Vanvitelli"** in collaboration with **INAF - Osservatorio Astronomico d'Abruzzo** studying the dynamical evolution and multiple-populations in Globular Clusters. Supervisors: Prof. Oscar Straniero and Prof. Lucio Gialanella.
June 2022 - Nov. 2022	**Studentship at INAF - IAPS** entitled "Activity of study and formation of planetary structures, through modelling and/or remote sensing and/or laboratory data" concerning the projects "ExoMars", "Dawn" and "TRIS". Study of the numerical methods of Smoothed Particle Hydrodynamics for the simulation of hydrodynamic phenomena of interest for the mentioned projects.
Feb. 2022 - June 2022	**Internship at INAF - Astronomical Observatory of Rome**, finalized at learning the mathematical techniques of the "Information Field Theory" and their application to astronomical data, with reference to the high-contrast images produced within the SHARK-VIS project, an instrument intended for the LBT telescope for deep detection of exoplanets through direct images.
From Dec. 2021	**Research collaborator at the Physics Department - University of Rome "La Sapienza"**, concerning the study of multi-mass models for Globular Clusters.

Research Interests

Stellar dynamics, collisional systems, Globular Clusters, stellar systems and populations, gravothermal catastrophe, formation, evolution and stability of self gravitating systems. I am also interested in topics concerning gravity, stellar formation and evolution, dark matter, planetary sciences and numerical methods for simulations and data analysis.

Education

16th Nov. 2021	**Master degree in Astronomy & Astrophysics, University of Rome "La Sapienza", *cum laude*.** Thesis title: Gravothermal catastrophe in models of Globular Clusters with a mass distribution. Supervisor: Prof. Marco Merafina.
1st Oct. 2019	**Bachelor's degree in Physics, University of Rome "La Sapienza"**.Dissertation title: Carbon ignition curves for massive stars. Supervisor: Prof. Oscar Straniero

Pubblications

2022	Merafina M. and **Teodori M.**, "Generalization of the Fokker-Planck equation for stellar orbit diffusion in multi-mass star systems" [arXiv: 2205.10209]

Collaborations

Active

– Participation to scientific meetings of the research group lead by Prof. Marco Merafina at University of Rome "La Sapienza", concerning a research project entitled "Stellar evolution and dynamical evolution in Globular Clusters: theoretic development and N-body simulations".

– Collaboration with INAF-IAPS for the study of volatiles emission from planetary surface and fractures using a Smoothed Particle Hydrodynamics (SPH) approach. Member of the International Space Science Institute (ISSI) group led by Dott. Michelangelo Formisano, for the project "Thermophysical characterization of ice-rich areas on the surface of specific planetary bodies: conditions for the formation of a transient exosphere", active in the development of SPH codes able to collaborate with Eulerian codes.

Past

– Collaboration with INAF-OAR for the development of codes for High Contrast Imaging for the SHARK-VIS project, finalized at the direct detection of extrasolar planets.

Talks

16-20 Oct. 2023	STARS Across the Universe. **M. Teodori**, O. Straniero, M. Merafina and L. Gialanella, "*Dynamical evolution of Multiple Populations in Globular Clusters*".
6-10 Feb. 2023	XVIII Congresso Nazionale di Scienze Planetarie, Perugia. **M. Teodori**, G. Magni, M. Formisano, M. C. De Sanctis and F. Altieri, "*Volatiles emission from a fracture on a planetary surface: a Smoothed-Particle-Hydrodynamics approach*".
14th Nov. 2022	G11 Workshop, Physics Department, University of Rome "La Sapienza". **M. Teodori**, "*Multi-mass collisional stellar systems models for Globular Clusters*".

Posters

8-12 May 2023	Biennial European Astrobiology Conference BEACON 2023, La Palma & Teneguia Princess Hotel on Fuencaliente, La Palma Island (Canary Islands, Spain). **M. Teodori**, G. Magni , M. Formisano , M. C. De Sanctis and F. Altieri, "*Volatiles emission from a cavity on a planetary surface using smoothed particle hydrodynamics*".

Seminars

16th Feb. 2023	INAF-OOAb colloquia. **Matteo Teodori**, "*The interconnection between multi-mass dynamical models and multiple populations in Globular Clusters*".

PhD schools

2-6 October 2023	INAF - Scientific Communication in Astronomy School, Bertinoro, Italy.

Coding/software experience

Programming languages	**C** intermediate level (4 yrs, Bachelor's degree thesis and courses, PhD project), **Fortran** intermediate level (2 yrs, Master thesis, PhD project), **MATLAB** (for programming) basic level (PhD course) and **Python** intermediate level (2 yrs, INAF experiences and PhD project).
Professional skills	Basic experience (1 yr) with parallel codes: **PySPH** for hydrodynamical simulations, **MCLUSTER** and **NBODY6++** for setting initial conditions and perform N-body simulations of Globular Clusters respectively.
Data analysis and visualization	Experience with **MATLAB** (6 yrs) and **Python** (2 yrs) acquired during university courses, thesis work, INAF experiences and PhD project.
Document drafting	Experience of 6 yrs with LaTeX, in particular for scientific reports and papers drafting.

Remote control	Basic knowledge (2 yrs) of remote connection to servers for running numerical simulation using SSH and SFTP protocol or a remote desktop software like AnyDesk, Splashtop and TeamViewer.
Others	Intermediate experience in **Office automation** packages, in particular with software for presentation, document elaboration and spreadsheets, refined from Italian secondary school to today (around 12 yrs experience). Basic ability in managing videoconferencing.

Teaching experiences

Tutoring	Occasional and sometimes regular tutoring of high school students in Math and Physics.
Others	Helping out with master degree thesis work of prof. Merafina students.