Europass Curriculum Vitae

Personal information

Name / Surname	**Matteo Teodori**
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Nationality	Italian
Date of birth	22/07/1997

Research experiences

From December 2022	**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- November 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.
February 2022 - June 2022	**Stage 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 December 2021	**Research activities at the Physics Department - University of Rome "La Sapienza"**, concerning the study of multi-mass models for Globular Clusters.

Education

16th November 2021	**Master degree in Astronomy & Astrophysics, University of Rome "La Sapienza", *cum laude***. Thesis title: Gravothermal catastrophe in models for Globular Clusters with a mass distribution. Supervisor: Prof. Marco Merafina.
1st October 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]

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.

Collaborations

Active

– Collaboration with the research group lead by Prof. Marco Merafina at the Physics Department - University of Rome "La Sapienza" concerning the 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 to 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 in the development of codes for High Contrast Imaging for the SHARK-VIS project, finalized at the direct detection of extrasolar planets.

Conferences/workshops

8-12 May 2023 — Biennial European Astrobiology Conference BEACON 2023, La Palma & Teneguia Princess Hotel on Fuencaliente, La Palma Island (Canary Islands, Spain). Poster: *Volatiles emission from a cavity on a planetary surface using smoothed particle hydrodynamics*.

6-10 February 2023 — XVIII Congresso Nazionale di Scienze Planetarie, Perugia, Italy. Talk: *Volatiles emission from a fracture on a planetary surface: a Smoothed-Particle-Hydrodynamics approach*.

14th November 2022 — G11 Workshop, Physics Department, University of Rome "La Sapienza". Talk: *Multi-mass collisional stellar systems models for Globular Clusters*.

PhD schools

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

Seminars

Held

16 February 2023 — INAF-OOAb colloquia -*The interconnection between multi-mass dynamical models and multiple populations in Globular Clusters*, Matteo Teodori (University of Campania *Luigi Vanvitelli*).

Followed

15/06/2023, 11:30 — OAPD Seminar, Good practice in science talks, Roberto Decarli (INAF-OAS Bologna).

24/05/2023, 15:00 — Astroseminar, Hierarchical Black Hole Mergers: A Multi-Band Opportunity for Gravitational Waves, Giacomo Fragione (CIERA Fellow, Northwestern University, Evanston, USA).

24/05/2023, 15:00 — MoRe-ASI seminar, Let's take a look inside!, prof. Luciano Iess (Dipartimento di Ingegneria meccanica e aerospaziale, Sapienza Università di Roma).

27/04/2023, 15:00 — INAF-OAAb colloquia, Active volcanism on Venus: scientific implications and future perspectives through the Project "Analogs for VENus's GEologically Recent Surfaces" (AVENGERS), Piero d'Incecco (INAF-Osservatorio Astronomico d'Abruzzo).

20/04/2023, 11:30	INAF-OAPD seminar, Galactic Archaeology. From multiple stellar populations in star clusters to extremely metal-poor stars, Giacomo Cordoni (University of Padua).
18/04/2023, 14:30	INAF-IASF Milan colloquium, Scaling Relations: a new framework for understanding the evolution of early type galaxies, Prof. Cesare Chiosi (University of Padua).
06/04/2023, 14:00	MoRe-ASI seminar, Exploring the Ocean Worlds of the outer solar system: the search for life beyond Earth, Dr. Anezina Solomonidou(Hellenic Space Center - HSC).
04/04/2023, 11:30	INAF-OAPD seminar, The First Galaxies with JWST - Discoveries and Properties, Prof. Christopher Conselice (Manchester University).
16/03/2023, 15:00	Web-SEMINAR at OAAb, Globular Cluster formation as a runaway process, Prof. Alvio Renzini (INAF - Osservatorio Astronomico di Padova).
01/02/2023, 11:00	IAPS Seminar - The multiplicity of stellar populations of Globular Clusters, Santi Cassisi (INAF-Osservatorio Astronomico d'Abruzzo).
17/01/2023, 14:00	Astrophysics Talk - Galactic dynamics with Gaia DR3: A new resonance-like feature in the outer disc of the Milky Way, Shourya Khanna (INAF-Torino).
28/11/2022, 15:00	Seminar at Department of Physics, Sapienza University of Rome - About the Observational Check of the Mechanism of Gamma Radiation in Soft Gamma Repeaters (SGR), Prof. Bisnovatyi-Kogan (Space Research Institute, IKI, Moscow).
24/11/2022, 11:30	Joint Astrophysical Colloquium - First stars and their chemical fingerprints, Stefania Salvadori (Università di Firenze).
17/11/2022, 11:00	OATo Seminars - Gravity vs matter: stars as laboratory to test theories of gravity, Dr. Aneta Magdalena Wojnar (Laboratory of Theoretical Physics, Department of Theoretical Physics, Institute of Physics, University of Tartu
16/11/2022, 14:30	Joint Astrophysics Colloquium - Multiple populations in Globular Clusters in the era of JWST, Prof. Antonino Milone (University of Padua).
15/11/2022, 14:00	Astrophysics Talk - Galactic archaeology using chemical clocks, Giaca Casali (DIFA - Unibo).
21/10/2022, 10:00	Soft skills - La leadership nei contesti professionali, Career Service Sapienza & Porta Futuro Lazio.
20/10/2022, 16:00	Astroseminar - Dark matter, black holes and gravitational waves, Gianfranco Bertone (GRAPPA, Amsterdam).
18/10/2022, 14:00	Astrophysics Talk - On the rotation curve of disk galaxies in General Relativity, Luca Ciotti (Università di Bologna).
14/10/2022, 11:00	IFPU Colloquium - Dark Matter in the Universe, Katherin Freese (University of Texas at Austin).
14/09/2022, 11:00	IAPS we seminar - Volcanism on Mercury, D. Rothery (The Open University, Milton Keyenes, UK).
07/9/2022, 14:30	Joint Astrophysics Colloquium - Comets as clues to the formation and evolution of planetesimals, Prof. Jurgen Blum (Technische Universität Braunschweig, German).
15/06/22, 15:30	JEDI Star Talk - The astrochemical trail from clouds to disks and planets, Ewine F. van Dishoeck (Leiden Observatory, Leiden University).
15/06/22, 14:30	Deciphering ALMA observations of protoplanetary disks Deciphering ALMA observations of protoplanetary disks, Prof. Cornelis P. Dullemond (Zentrum fürAstronomie – University of Heidelberg.)
27/04/22, 15:00-18:00	Spazio, Ultima Frontiera II Edizione - II Giornata, Sapienza Università di Roma.
13/04/22, 18:00	Masterclass | Excel, le basi: stili, gestione e organizzazione del foglio di lavoro
08/04/22, 16:00-17:00	Il tempo tra scienza e filosofia, Discovery Link Sapienza.
29/03/22, 10:00-12:00	Exploring the challenges, opportunities and the future of Space Education in Europe | European Space Policy Institute (ESPI)
08/09/21, 14:00-15:00	Employabiliy Lab: Il ruolo dell'employability e delle risorse personali per la ricerca proattiva del lavoro | Sapienza Università di Roma.
23-28/04/21 e 4-7/05/21	Corso di Finanza Personale | Link Economics Sapienza Università di Roma
3/10/2019, 16:00-18:00	Fisica degli Esopianeti: Progetti futuri, pianeti abitabili e biosignatures (Lezione 15) | Cattedra "Enrico Fermi" 2018/2019, Prof.ssa Giovanna Tinetti

Training courses

27/01/2022	**Machine Learning with MATLAB**, MathWorks | Training Services.
17/01/2022	**MATLAB Programming Techniques**, MathWorks | Training Services.
15/12/2021	**MATLAB for Data Processing and Visualization**, MathWorks | Training Services.
11/12/2021	**Deep Learning Onramp**, MathWorks | Training Services.
09/12/2021	**Machine Learning Onramp**, MathWorks | Training Services.
03/12/2021	**MATLAB Fundamentals**, MathWorks | Training Services.
24/11/2021	**MATLAB Onramp**, MathWorks | Training Services.
04/05/2021	**National course of online formation, Cyber Security - basic level**, INFN.
06/05/2014	**European Computer Driving Licence ECDL**.

Personal skills

Mother tongue — **Italian**

Other languages

Self-assessment *European level*(*)

	Understanding		Speaking		Writing
	Listening	Reading	Spoken interaction	Spoken production	
English	B1	B1	B1	B1	B1

(*) *Common European Framework of Reference* (CEF) level

IT skills — Intermediate experience in **Office automation** packages, in particular with software for presentation, document elaboration and spreadsheets, refined from Italian secondary school to today. Basic ability in managing videoconferencing. Basic knowledge (2 yrs) of remote control for running numerical simulations using SSH protocols or a remote desktop software (AnyDesk, Splashtop, TeamViewer). Good experience in **data analysis and visualization**, in particular with MATLAB (6 yrs) and Python (2 yrs) acquired during, university courses, thesis work, INAF experiences and PhD project. Document drafting with **LaTeX**, in particular for scientific reports and papers drafting (experience of 6 yrs). Known programming languages: **C** intermediate level (Bachelor's degree thesis and courses, PhD project), **Fortran** intermediate level (Master thesis, PhD project), **MATLAB** (for programming) basic level (PhD course) and **Python** intermediate level (INAF experiences and PhD project).

Communication — Ability of **work in team** practiced during PhD projects for courses, studentship at INAF-IAPS and stage at INAF-OAR, collaborations, university laboratory experiences during Bachelor's degree and in team sports. Mediation skills (construction of dialogue and confrontation environments) and intercultural communication skills developed during volunteer activities as animator.

Organization — Ability of time, information and energies organization, achieved during the university path. Ability to be authoritative, welcoming and listening (volunteer animator). Able to organize and lead team work (students group for courses).

Professional skills — Basic experience (1 yr) with codes for numerical simulations for hydrodynamics (PySPH) and N-body problems (NBODY6++).

Other skills — Fast and continuous learning. Precision and attention to details. Predisposition to problem solving. Flexibility and initiative spirit. Ability to achieve a set goals.

Driving license — B