

Europass Curriculum Vitae



Personal information

Name / Surname

Personal Email

Home page

Nationality

Date of birth

Matteo Teodori

teodori.matteo97@gmail.com

<https://matteoteodori.github.io/>

Italian

22/07/1997

Research experiences

From 01/12/2022

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.

01/06/2022-30/11/2022

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 January 2022

Research activities at the Physics Department - University of Rome "La Sapienza", concerning the study of multi-mass models for Globular Clusters.

Education

16/11/2021

Master degree in Astronomy & Astrophysics, University of Rome "La Sapienza", degree mark 110/110 *cum laude*. Thesis title: Gravothermal catastrophe in models for Globular Clusters with a mass distribution. Supervisor: Prof. Marco Merafina.

01/10/2019

Bachelor's degree in Physics, University of Rome "La Sapienza", degree mark 104/110. Dissertation title: Carbon ignition curves for massive stars. Supervisor: Prof. Oscar Straniero

2016

Scientific High School diploma, degree mark 85/100.

Publications

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

Among my main research interest there are stellar dynamics, collisional systems, Globular Clusters, stellar systems and populations, gravothermal catastrophe, formation, evolution and stability of self gravitating systems, multiple populations in Globular Clusters. I am also interested in the emission of volatiles from planetary surfaces, mainly concerning the dynamical and thermal modelling. Finally, I am also interested in other 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*.

14 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).

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| 27/04/2023, 15:00 | INAF-OAAb colloquia, Active volcanism on Venus: scientific implications and future perspectives through the Project "Analogues 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 Keynes, 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 für Astronomie – University of Heidelberg). |
| 27/04/22, 15:00-18:00 | Spazio, Ultima Frontiera II Edizione - Il 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 | Employability Lab: Il ruolo dell'employability e delle risorse personali per la ricerca proattiva del lavoro Sapienza Università di Roma. |

Training courses

27/01/2022
17/01/2022
15/12/2021

11/12/2021
09/12/2021
03/12/2021
24/11/2021
04/05/2021
06/05/2014

Machine Learning with MATLAB, MathWorks | Training Services.
MATLAB Programming Techniques, MathWorks | Training Services.
MATLAB for Data Processing and Visualization, MathWorks | Training Services.
Deep Learning Onramp, MathWorks | Training Services.
Machine Learning Onramp, MathWorks | Training Services.
MATLAB Fundamentals, MathWorks | Training Services.
MATLAB Onramp, MathWorks | Training Services.
National course of online formation, Cyber Security - basic level, INFN.
European Computer Driving Licence ECDL.

Personal skills

Mother tongue
Other languages
*Self-assessment
European level^(*)*

English

IT skills

Communication

Organization

Professional skills

Other skills

Driving license

Italian

| Understanding | | Speaking | | Writing |
|---------------|---------|--------------------|-------------------|---------|
| Listening | Reading | Spoken interaction | Spoken production | |
| B1 | B1 | B1 | B1 | B1 |

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

Good ability to use **Office automation** packages, in particular with software for presentation, document elaboration and spreadsheets. Good ability in managing videoconferencing and basic knowledge of remote control. Good ability of **data analysis and visualization**, in particular with MATLAB. Good knowledge of **L^AT_EX**, in particular for scientific reports drafting. Known programming languages: **C, Fortran, MATLAB, Python**.

Ability of work in team (experiences at INAF, university laboratory experiences, report drafting, team sports). Mediation skills (construction of dialogue and confrontation environments). Intercultural communication skills.

Ability of time, information and energies organization. Ability to be authoritative, welcoming and listening. Able to organize and lead team work.

Good data analysis skills (Python, MATLAB). Experience with codes for numerical simulations for hydrodynamics (PySPH) and N-body problems (NBODY6++). Experience with educational (university laboratories) and amateur (free time) telescopes.

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

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