

# Department of Mathematics University of Rome Tor Vergata



MatMod@TOV Excellence Project 2023-2027 NEWSLETTER N°3 May 2024 – September 2024



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## Presentation

The Department of Mathematics of the University of Rome Tor Vergata is distinguished by first class research, often motivated by applications from theoretical physics, astronomy, aerospace, finance, technology and medical science, a high-level educational system, and the organization of events in the context of the so-called third mission of the University. For details we refer to the Department's website: <u>https://www.mat.uni-roma2.it/index.php</u>

The Department aims to increase its leading role in research, math education and math culture. The recently awarded national Excellence Project 2023-2027, denoted by MatMod@TOV, offers the opportunity to face new challenges, and its main objectives are:

- foster new collaborations between staff members on advanced research themes
- hire excellent staff members, able to participate in multiple research projects
- stimulate the interaction with excellent math groups, both in public research institutions and industry, and transform the Department into a strategic asset for the development of highly advanced mathematics and its application to specific problems
- increase the international visibility of the Department
- improve the Master and PhD Programs in Mathematics
- intensify the spreading of Math Culture

See the web page of the project MatMod@TOV: <a href="https://www.mat.uniroma2.it/progetto/">https://www.mat.uniroma2.it/progetto/</a>

## Recruitment



The MIUR Excellence Grant (CUP E83C23000330006, 2023-2027), awarded by the Mathematics Department of the University of Rome Tor Vergata (project MatMod@TOV), provides funds for Assistant and Associate Professorships as well as for Postdoc Positions.

All details at <a href="https://www.mat.uniroma2.it/progetto/recruitment.php">https://www.mat.uniroma2.it/progetto/recruitment.php</a>

### Professorships

We congratulate:

• Dr. Lorenzo Dello Schiavo, winner of the "Tenure-Track" Assistant Professorships (RTD-B) in Probability (Gruppo Scientifico Disciplinare 01/MATH-03 – Settore Scientifico Disciplinare MATH-03/B).

### **Postdoc positions**

The following Postdoc position selection procedure is in progress:

• 1 (two years) Postdoc position (Assegni di Ricerca - III Fascia) in Mathematical Analysis (Gruppo Scientifico Disciplinare 01/MATH-03 – Settore Scientifico Disciplinare MATH-03/A) – Title: "Proprietà statistiche dei sistemi dinamici"

See <a href="https://pica.cineca.it/uniroma2/">https://pica.cineca.it/uniroma2/</a>

#### We also congratulate:

• Dr. Chiara Bernardini, winner of the (two years) Postdoc position (Assegni di Ricerca - II Fascia) in Mathematical Analysis (Gruppo Scientifico Disciplinare 01/MATH-03 – Settore Scientifico Disciplinare MATH-03/A) – Title: "Elliptic differential problems in physics and geometry".

• Dr. Jacopo Tenan, winner of the (two years) Postdoc position (Assegni di Ricerca - I Fascia) in Mathematical Analysis (Gruppo Scientifico Disciplinare 01/MATH-03 – Settore Scientifico Disciplinare MATH-03/A) – Title: "Geometric flows and applications".

• Dr. Davide Redaelli, winner of the (two years) Postdoc position (Assegni di Ricerca - I Fascia) in Mathematical Analysis (Gruppo Scientifico Disciplinare 01/MATH-03 – Settore Scientifico Disciplinare MATH-03/A) – Title: "Equazioni alle derivate parziali in dinamiche di popolazioni e modelli di campo medio".

• Dr. Federico Caucci, winner of the (two years) Postdoc position (Assegni di Ricerca - I Fascia) in Geometry (Gruppo Scientifico Disciplinare 01/MATH-02 – Settore Scientifico Disciplinare MATH-02/B) – Title: "Geometria algebrica".

• Dr. Beatrice Sisana, winner of the (one year) Postdoc position (Assegni di Ricerca - I Fascia) in Complementary Mathematics (Gruppo Scientifico Disciplinare 01/MATH-01 – Settore Scientifico Disciplinare MATH-01/B) – Title: "Francesco Maurolico e lo sviluppo della matematica del XVI secolo".

• Dr. Giacomo Greco, winner of the (two years) Postdoc position (Assegni di Ricerca - III Fascia) in Probability (Gruppo Scientifico Disciplinare 01/MATH-03 – Settore Scientifico Disciplinare MATH-03/B) – Title: "Geometria dei campi aleatori ed applicazioni".

## Research



### **Research Topics**

During the period May 2024 – September 2024, MatMod@TOV organized a series of seminar talks/collaborations about the following main research topics:

- 1) Dynamical Systems and Statistical Physics
- 2) Quantum Field Theory and Quantum Information Theory
- 3) Mathematical Modelling and PDE's
- 4) Topological Data Analysis
- 5) Algebraic Geometry and Applications
- 6) Mathematical Modelling in Celestial Mechanics and Space Applications
- 7) Mathematical Modelling, Probability, Statistics and Machine Learning
- 8) Mathematical Modelling and Numerical Analysis
- 9) Mathematical Modelling and Climate Change

This is a partial list of the invited speakers/collaborators during the period: B. Schlein (Universitä Zürich), C. Casagrande (University of Torino), J. Grošelj (University of Ljubljana), S. Marini (University of Parma), G. Vezzosi (University of Firenze), V. Bertini (University of Genova), M. Coti Zelati (Imperial College, London), S. Galatolo (University of Pisa), M. D'Addezio (I.R.M.A. Strasbourg), V. Moroz (Swansea University), G. Paolini (University of Bologna), U. Krähmer (T.U. Dresden), K. Christ (U.T. Austin), S. Vaes (K.U. Leuven), C. Dappiaggi (University of Pavia), L. Zhang (University of Florida), J. Pearson (University of Edinburgh), P. Aschieri (University of Piemonte Orientale), N. Pinamonti (University of Genova), V. Sohinger (University of Warwick), M.M. Porzio (University of Rome "Sapienza"), D. Toshniwal (Delft U.T.), G. A. García (U.N. de La Plata/CONICET), S. Di Trani (University of Rome "Sapienza"), D. Kerr (Universitä Münster), G. Ricci. (cf. also <a href="https://www.mat.uniroma2.it/seminari-new2.php?inizio=0&pagina=1">https://www.mat.uniroma2.it/seminari-new2.php?inizio=0&pagina=1</a>)

#### Levi Civita Colloquium (In partnership with CMPT)

Martin Hairer: Supercritical KPZ equations. Date: June 4<sup>th</sup>, 2024 Organizers: Center for Mathematics and Theoretical Physics (<u>http://cmtp.uniroma2.it/</u>)

## **Conferences and Workshops**

MatMod@TOV is funding a wide activity of conferences/workshops/advanced lecture series/schools. Recent events are listed below.

- Women and Space 2
   Date: May 28<sup>th</sup>, 2024
   Place: Accademia Nazionale dei Lincei, Villa Farnesina, Roma
   Organizers: A. Celletti, U. Locatelli, A. Sorrentino, E. Strickland (University of Rome "Tor Vergata")
   <u>https://www.mat.uniroma2.it/~womenspace2/</u>
- School: CIME School on High-Dimensional Approximation (In partnership with RoMaDS, CIME, GNCDS-INdAM)
   Date: September 23<sup>th</sup>—27<sup>th</sup>, 2024
   Place: Cetraro (Italy)
   Organizers: A. Cohen (Sorbonne University), D. Marinucci, H. Speelers (University of Rome "Tor Vergata").
   https://www.mat.uniroma2.it/~speleers/cime2024/
- Workshop: Computational aspects of complex networks
   Date: December 6<sup>th</sup>, 2024
   Place: Department of Mathematics, University of Rome "Tor Vergata"
   Organizers: D. Bertaccini, A. Clementi, C. Manni, M. Mazza (University of Rome "Tor Vergata"), https://www.mat.uniroma2.it/progetto/Events\_pages/2024/Cacn2024/page-cacn2024.php

## RoMaDS

(Rome Center on Mathematics for Modeling and Data ScienceS)

Recently founded by MatMod@TOV project, the aim of the center is to contribute to the development of mathematical research in the field of modeling and data science through the organization of seminars, conferences and doctoral coursers (<u>https://www.mat.uniroma2.it/~rds/events.php</u>).

Even more important is the possibility of establishing a permanent forum for the interaction between mathematical research and actual applications. In particular, the interdisciplinary nature of the center allows the creation of stable interactions between those involved in mathematical techniques of data analysis in different departments of the University. At the same time, our goal is to foster interactions with other research centers and even outside the strictly academic sphere.

https://www.mat.uniroma2.it/~rds/about.php

## High level teaching activities



### **Grants and Curriculum of Excellence**

- MatMod@TOV funded 3 prizes, for an amount of 2,000.00 euros each, for master's students enrolled in the academic year 2024/2025 and 3 degree prizes, for an amount of 2,000.00 euros each, for master's graduates in Pure and Applied Mathematics at Tor Vergata from July 2023 to June 2024. The latter award is aimed at master's theses satisfying at least one of the following conditions: a significantly original result; an efficient implementation and/or a particularly significant numerical experimentation; a clear and in-depth presentation of highly significant results.
- MatMod@TOV funded the following students of the Master's Curriculum of Excellence in Pure and Applied Mathematics at Tor Vergata:

- Lorenzo FIORITO, for the participation in the 2024 Princeton Machine Learning Theory Summer School, August 6 - 15, 2024;

- Federico PAPA, for the participation in the Trento School in Geometry, August 26 - 30, 2024;

- Tiziano BIGAZZI, for the participation in the Hokkaido-Pisa-Roma Tor Vergata-Torino, held in Hokkaido, August 26 - September 6, 2024.

# Third mission



- Fourteen courses for transversal skills and orientation (PCTO) and the school courses of 27 classes involved in the Mathematical High School were completed.
- From June 25<sup>th</sup> to June 27<sup>th</sup>, the Department of Mathematics collaborated in the creation of a summer school on mathematics organized by the Engineering Macroarea. The school was attended by secondary school students, who attended mathematics laboratories and orientation meetings related to university study courses. Furthermore, other specific initiatives were organized to facilitate the choice of a university path.

# **General Activities**



MatMod@TOV is also meant to fund renovations of rooms/laboratories of the Department, acquisition of modern equipment, research books, etc.

During the period May 2024 – September 2024, the Mathematics Department carried out a series of major technical updates to the departmental infrastructure:

- Supply of hardware devices following the "IT Call 2024"
- Software licenses renewal for department data center: 1.07.2024 to 30.06.2025 DL360 gen10 s/n CZJ02504YC, CZJ02504YB, MSA2052 s/n ACM020T28B
- Software licenses renewal for department data center: VMWARE VSPHERE FOUNDATION 1-YEAR PREPAID COMMIT - PER CORE from 28/05/2024
- Software licenses renewal for department data center: from 09/06/2024 to 08/06/2025 VEEAM DATA PLATFORM FOUNDATION ENTERPRISE WORKLOADS: 4 SOCKETS LICENSING
- Software licenses renewal for department data center: SmartUPS VT 30vVA s/n QS1929151008 from 01/07/2024 to 30/06/2025
- Department data center update: HPE 1.92TB SATA MU SFF SC MV SSD
- Warranty Support extension on the Chassis: 5UF9118W7V, 5UF9118W7W
- Start of the new rental report for departmental photocopiers