



Department of Mathematics  
University of Rome Tor Vergata



MATH@TOV

Excellence Project 2018-2022

NEWSLETTER

N°2 – July – September 2018



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# Presentation

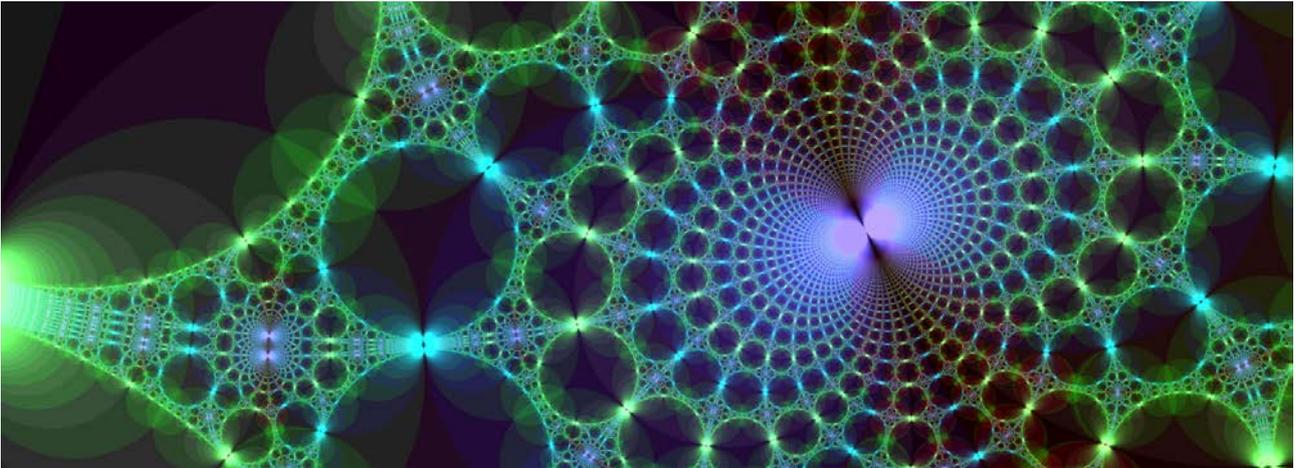
The Department of Mathematics of the University of Rome Tor Vergata is distinguished by first class research, often motivated by applications from theoretical physics, astronomy, aerospace, finance, technology and medical science, a high level educational system, and the organization of events in the context of the so-called third mission of the University. For details we refer to the Department's website, <http://www.mat.uniroma2.it>

The Department aims to increase its leading role in research, math education and math culture. The recently awarded national Excellence Project 2018-2022, denoted by MATH@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 MATH@TOV: <http://www.mat.uniroma2.it/Progetto/>

# Recruitment



The MIUR Excellence Grant (CUP E83C18000100006, 2018-2022), awarded by the Mathematics Department of the University of Rome Tor Vergata (project MATH@TOV), provides funds for 2 “Tenure-Track” Assistant Professorships (RTD-B) in specific disciplines. In July 2018, the Central Administration of the University confirmed the positions as follows:

- 1 position in Geometry (Settore concorsuale 01/A2-Settore Scientifico Disciplinare MAT/03)
- 1 position in Numerical Analysis (Settore concorsuale 01/A5-Settore Scientifico Disciplinare MAT/08)

See

[http://www.uniroma2.it/ammin/senato/2018/23-07-18/10\\_4.pdf](http://www.uniroma2.it/ammin/senato/2018/23-07-18/10_4.pdf)

and

[http://www.uniroma2.it/ammin/cda/2018/24-07-18/15\\_6.pdf](http://www.uniroma2.it/ammin/cda/2018/24-07-18/15_6.pdf)

Both positions are for three years and, after evaluation, can be converted in tenured Associate Professorships; they will be opened not earlier than 2019 and will be awarded through a public competition. Applicants must have at least three years of experience after PhD completion, and an established research record.

More information will appear soon on <http://www.mat.uniroma2.it/Progetto/recruitment.php>

# Research



## Thematic Semesters

During the period October 2018 - March 2019, MATH@TOV organizes a thematic semester with a series of seminar talks in the following areas ( cf. also <http://www.mat.uniroma2.it/Progetto/short-visit.php> )

### Operator Algebras and Quantum Field Theory

- Among others, we plan to have the following speakers: Gwyn Bellamy (Scotland), Pierre Bieliavsky (Louvain, Belgium), Detlev Buchholz (Goettingen, Germany), Ken Dykema (Texas, USA), Ghislain Fourier (Germany), Klaus Fredenhagen (Hamburg, Germany), Benoit Fresse (France), Michael Magee (UK), Ryszard Nest (Copenhagen, Denmark), Nicola Pinamonti (Genova, Italy), Wolfgang Soergel (Germany), Layla Sorkatty (Sudan).
- Besides the aforementioned activities, on November 16, 2018 we are going to have a day on "**Representation Theory in Rome and Beyond**" with Michel Brion (France), Peter Littelmann (Germany) and Michele Vergne (France) as speakers.
- Furthermore, on February 20-22, 2019 we shall have the workshop "**Foundations and Constructive aspects of QFT**", that is particularly directed to young researchers and PhD students; the workshop will be held at the *Galilei Institute* in Florence, within the collaboration frame between the *Center for Mathematics and Theoretical Physics* of our Department and the *National Institute for Nuclear Physics*.

### Holomorphic dynamics and geometry of complex manifolds and spaces, and their interplay

- Among others, we will have seminar talks by Marco Abate (Pisa, Italy), Alberto Abbondandolo (Germany), Cinzia Bisi (Ferrara, Italy), Manuel Contreras (Spain), Eleonora Di Nezza (France), Hakan Samuelsson Kalm (Sweden), Lukas Kosinski (Poland), Frank Kutzchebausch (Switzerland), Fulvio Ricci (SNS Pisa, Italy), Tatsuo Suwa (Japan), Adriano Tomassini (Parma, Italy), Erlend Wold (Norway), Andrew Zimmer (USA).

- On January 25, 2019 we will organize the mini-workshop "**Random Waves and Stochastic Geometry**", with seminar talks by Dmitry Belyaev (Oxford, UK), Anne Estrade (Paris Descartes, France), Igor Wigman (King's College, UK).
- Besides these activities, we will have the workshop "**Dynamical Systems: from Geometry to Mechanics**", which will take place at the Mathematics Department of the University of Rome Tor Vergata during the period February 5-8, 2019 and which is a link of this part of pure research themes of the project with the more applied part.

### Mathematical techniques for Earth and Space Science

- Among others, we plan to have the following speakers: Mauro Carfora (Italy), Anna Maria Cherubini (Italy), Cristel Chandre (France), Guido Ciraolo (France), Yabebal Fantaye (South Africa), Rida Farouki (USA), Helene Frankowska (France), Catalin Gales (Romania), Sokol Ndreca (Brazil), Rocio Isabel Paez (Italy), Alicia Simon-Petit (France), Giovanna Tinetti (UK).
- The activities will end with the workshop "**Mathematical Models and Methods in Earth and Space Sciences**", which will take place at the Mathematics Department of the University of Rome Tor Vergata during the period March 19-22, 2019.

### PDE's of Liouville type in Physics and Geometry

- Within MATH@TOV we shall have, among others, Marcello Lucia (CUNY New-York, USA) and Zheng Huang (CUNY New-York, USA). They will deliver seminars on the immersion problem for minimal surfaces.
- The topic will be expanded in several directions in the scientific school "**Variational approaches to PDE's**" to be held on March 13-14, 2019, see the link <http://axp.mat.uniroma2.it/~molle/Scuola2019/>.

## Conferences, Advanced Lecture Series, Scientific Schools

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

### 1) DEPARTMENT DAY

Venue and Date: Department of Mathematics, University of Rome Tor Vergata, Rome, December 19, 2018

The **Department Day** will be held at the Department of Mathematics; among other things, it will be the occasion to celebrate MATH@TOV, with seminar talks by invited speakers, established researchers from the Department as well as young researchers (see **Cuozzo-Prize** below).

More detailed information will appear soon on <http://www.mat.uniroma2.it>

## 2) Workshop “DYNAMICAL SYSTEMS: FROM GEOMETRY TO MECHANICS”

Link: <http://www.mat.uniroma2.it/Progetto/bridge2019.php>

Venue and Period: Department of Mathematics, University of Rome Tor Vergata, Rome, February 5-8, 2019

This workshop aims to provide a forum for discussion, exchange and collaboration on the most recent advances in dynamical systems, from different perspectives. Addressed topics include: Complex Dynamics, Ergodic Theory, Hamiltonian and Symplectic Dynamics, Smooth Dynamics, Topological Dynamics.

### Invited Speakers

- Marie-Claude Arnaud (Université d'Avignon, France)
- Viviane Baladi (IMJ-PRG, Sorbonne Université, France)
- Eric Bedford (Stony Brook University, United States of America)
- Pierre Berger (Université Paris 13, France)
- Rafael de la Llave (Georgia Institute of Technology, United States of America)
- Santiago Diaz Madrigal (Universidad de Sevilla, Spain)
- Dmitry Dolgopyat (University of Maryland, United States of America)
- Christos Efthymiopolus (Academy of Athens, Greece)
- Nuria Fagella (Universitat de Barcelona, Spain)
- Albert Fathi (Georgia Institute of Technology, United States of America)
- John Erik Fornæss (Norwegian University of Science and Technology, Norway)
- Vadim Kaloshin (University of Maryland, United States of America)
- Stefano Luzzatto (Abdus Salam International Centre for Theoretical Physics (ICTP), Italy)
- Stefano Marmi (Scuola Normale Superiore di Pisa, Italy)
- Gabriella Pinzari (Università degli Studi di Padova, Italy)
- Jasmin Raissy (Université de Toulouse, France)
- David Sauzin (CNRS-IMCCE, France)
- Tere M-Seara (Universitat Politècnica de Catalunya, Spain)
- Amie Wilkinson (University of Chicago, United States of America)

### Registration

Participation is free, but registration is necessary. To register, please follow this link:

<http://www.mat.uniroma2.it/Progetto/Eventi/entry-bridge2019.php>

The deadline is November 20, 2018. However, registration might be closed earlier, whenever the maximum capacity of the lecture room is reached. A limited number of grants covering lodging expenses will be available.

### Scientific and Organizing Committee

Filippo Bracci, Alessandra Celletti, Carlangelo Liverani, Alfonso Sorrentino

## 3) Workshop “MATHEMATICAL MODELS AND METHODS IN EARTH AND SPACE SCIENCES”

Link: <http://www.mat.uniroma2.it/Progetto/mmmess19.php>

Venue and Period: Department of Mathematics, University of Rome Tor Vergata, Rome, March 19-22, 2019

The workshop aims to provide a forum for discussion, exchange and collaboration on the most recent mathematical developments in earth and space sciences. Addressed topics include: mathematical models for space debris and air traffic stability of planets and satellites, data analysis in cosmology, numerical techniques in plasma physics, uncertainty quantification mathematical models in climatology.

### **Invited Speakers**

- Ethan Anderes (University of California at Davis, USA)
- Yosh Ashkenazy (Ben-Gurion University of the Negev, Israel)
- Roberto Battiston (Agenzia Spaziale Italiana, Italy)
- Annalisa Bracco (Georgia Institute of Technology, USA)
- Camilla Colombo (Politecnico di Milano, Italy)
- Tor Dokken (SINTEF, Norway)
- Giovanni Gronchi (Università di Pisa, Italy)
- Silvio Gualdi (CMCC, Bologna, Italy)
- Àngel Jorba (Universitat de Barcelona, Spain)
- Angela Kunoth (Universität zu Köln, Germany)
- Daniela Mansutti (IAC-CNR, Roma, Italy)
- Jason McEwen (University College, London, UK)
- Salvatore Micciché (Università di Palermo, Italy)
- Antonello Provenzale (IGG-CNR, Pisa, Italy)
- Eric Sonnendrücker (IPP, Garching, Germany)
- Jean-Luc Starck (CEA, Paris-Saclay, France)
- Emmanuel Trélat (Sorbonne Université - Paris 6, France)
- Massimiliano Vasile (University of Strathclyde, Glasgow, UK)

### **Registration**

Participation is free, but registration is necessary. To register, please follow this link: <http://www.mat.uniroma2.it/Progetto/Eventi/entry-mmmess19.php>

The deadline is November 20, 2018. However, registration might be closed earlier, whenever the maximum capacity of the lecture room is reached. A limited number of grants covering lodging expenses will be available.

### **Scientific and Organizing Committee**

Michiel Bertsch, Piermarco Cannarsa, Alessandra Celletti, Carla Manni, Domenico Marinucci, Massimo Picardello, Benedetto Scoppola, Alfonso Sorrentino, Hendrik Speleers

## High level teaching activities



### **Cuozzo Prize - PhD School in Mathematics**

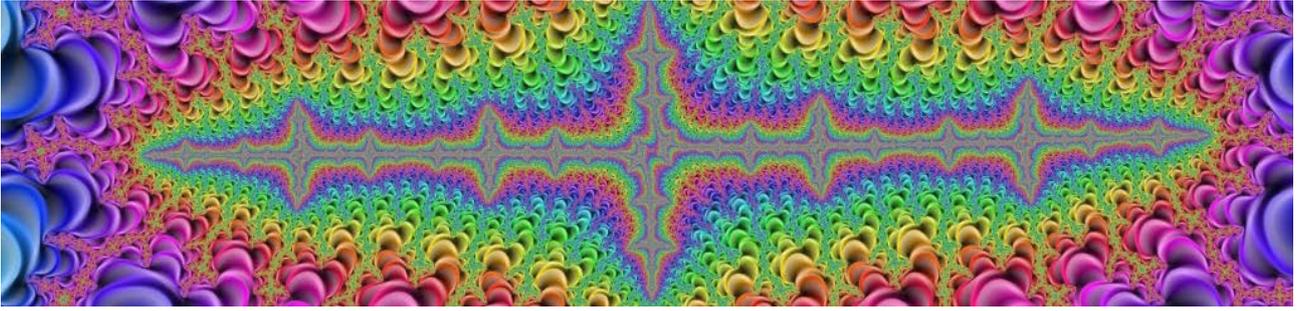
The Department of Mathematics hosts the “**Cuozzo Prize**” for young PhD graduates in Mathematics, sponsored by Vincenzo and Stefania Cuozzo in memory of Michele Cuozzo.

Application deadline: October 26, 2018, 12:00 noon.

The recipient will be invited to present a lecture at the **Department Day** on December 19, 2018.

Application Call: [http://www.mat.uniroma2.it/~lucia/Docs\\_avvisi-dip/PremioCuozzo2018\\_prot.pdf](http://www.mat.uniroma2.it/~lucia/Docs_avvisi-dip/PremioCuozzo2018_prot.pdf)

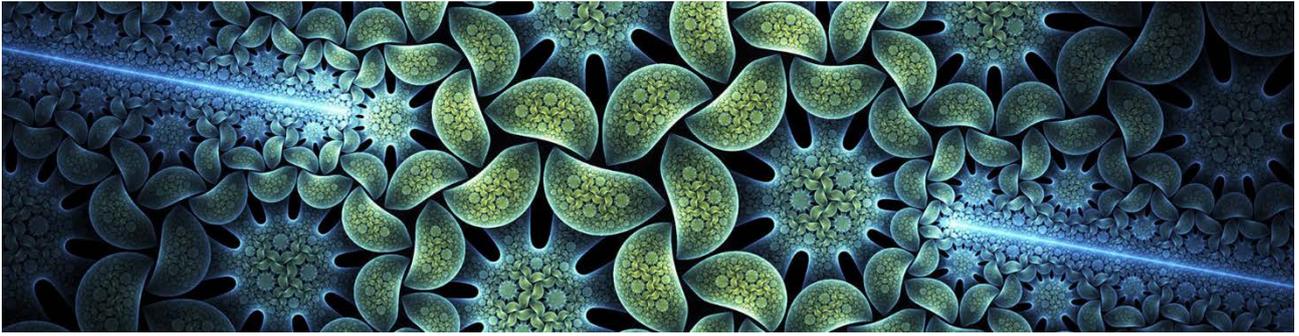
# General Activities



- The construction of a common room, which connects the two corridors on the second floor of the Mathematics Department, has begun.
- Expansion of rooms for the new Computing Centre of the Mathematics Department has been started. A new high performance server for parallel computing will be hosted in these rooms.

More details will appear in the future on <http://www.mat.uniroma2.it>

## Third mission



- As part of the MIUR "*Curriculum digitale*" call, two projects, to which the Mathematics Department is associated to, have been admitted to the second evaluation phase.
- Professors and PhD students of the Mathematics Department have begun to participate in the activities of the *Lincei Foundation* for the School (a.y. 2018-2019), with training activities in the framework of the projects "*Con la mente e con le mani*" and "*Curriculum verticale*" and conferences that will be held in the town of Latina.
- The "*Mathematical High School*" experiment enters the third year of activation, including new schools. As part of the "*Seminario Nazionale sulla Matematica nei Licei*", some schools affiliated with the Department have held a workshop, a short seminar and a poster exhibition.
- On July 18-21, 2018, the Department of Mathematics hosted the MYMC - Mediterranean Youth Mathematical Championships
- October 26-28, 2018 will be the occasion for the third edition of the "*Autumn School 2018*", which will take place in San Martino al Cimino (VT) and which will involve secondary school teachers in workshop activities.
- "*Tides and Geology*" is a workshop for secondary school students, as part of the "*Stage at Tor Vergata*", which will be held as an initiative of the Physics Department;
- "*Rete33*" is another activity to be held in the framework of MATH@TOV, concerning computing circuits and involving network of schools.