MATHEMATICS ONLINE SEMINAR SERIES

MOSS

ORGANIZED BY EMS YOUNG ACADEMY

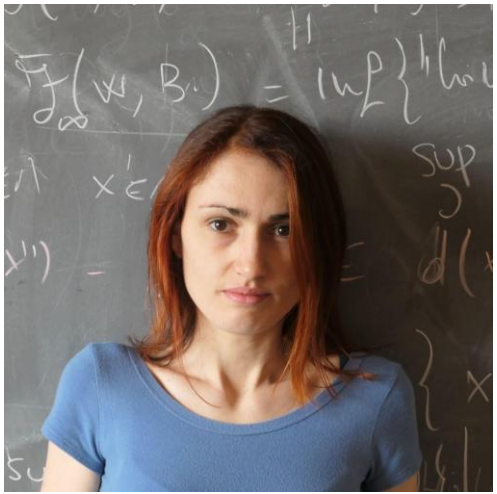
- **What?** Presentations from leading young academics in Mathematics from around the globe.
- **How?** Accessible to a broad audience, no matter the field.
- **Why?** To inspire the new generation of young mathematicians - those who are working towards or have just completed a PhD in Mathematics.
- **Where?** 100% online.
- **When?** Every first Thursday of each month at 4 p.m. (CET).
- **How long?** 45’ talk + 15’ Q&A.
- **How to stay tuned?** Register to the mailing list: https://docs.google.com/forms/d/e/1FAIpQLSfjXOc_H3IUqHTstGvEgYBYEwKqFd-UQVKgvf7mTzdshwckbw/viewform.

Upcoming: Cristiana De Filippis, Associate Professor, University of Parma, Italy

https://sites.google.com/view/cristianadefilippis/home

Link: https://meet.google.com/fyx-hgzr-jkt

Date: 6th Feb, 2025 at 4 p.m. (CET)



Title: Nonuniformly elliptic Schauder estimates

Abstract: Schauder estimates are a basic tool in elliptic and parabolic PDE and ultimately establish that solutions are as regular as coefficients. They intervene in many situations, such as higher regularity of solutions to problems showing any kind of ellipticity, including free boundaries, bootstrap processes, existence theorems and so on. In the linear case they are a classical topic, with results obtained since the '20s of the past century by Hopf, Giraud, Caccioppoli and Schauder. New proofs were achieved over the years by Campanato (via proper function spaces), Trudinger (via convolution methods), Leon Simon (via blow-up). Nonlinear versions were settled by Giaquinta & Giusti, Ivert, DiBenedetto, Manfredi. All these results deal with uniformly elliptic operators, and unavoidably rely on perturbation methods, i.e., freezing coefficients and comparing original solutions to solutions with problems without coefficients. Such methods do not any longer deliver results in nonuniformly elliptic problems, for which homogeneous a priori estimates are lost and standard iteration arguments break down. We shall present a solution to the longstanding problem of establishing the validity of Schauder estimates in the nonlinear, nonuniformly elliptic setting. This features a novel approach to a priori gradient bounds that does not rely on perturbation although the problems involved are non-differentiable. From recent, joint work with Giuseppe Mingione (Parma).

The schedule of the first season of online seminars is the following:

6th March: Thomas Hutchcroft (California Institute of Technology, USA)
3rd April: Adam Kanigowski (University of Maryland, USA)
8th May: Jessica Fintzen (University of Bonn, Germany)
5th June: Richard Montgomery (University of Warwick, UK)

Stay tuned! We are looking forward to e-seeing you!

Organizers: Jelena Jankov Pavlović (University of Osijek, Croatia, jjankov@mathos.hr) and Cristina Molero-Río (Universidad Carlos III de Madrid, Spain, mamolero@est-econ.uc3m.es) from EMYA.