PDE CDT & OxPDE Newsletter
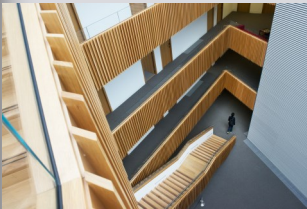
CDT Mini-Course

Glimpses of Lipschitz Truncations and Regularity Prof Bianca Stroffolini (Naples)

**2-4pm 21 October-C4
9-11am 22 October-C4
9-11am 28 October-N4.01
9-11am 29 October-N4.01**

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**EPSRC Centre for Doctoral Training in Partial Differential Equations
Oxford Centre for Nonlinear Partial Differential Equations**
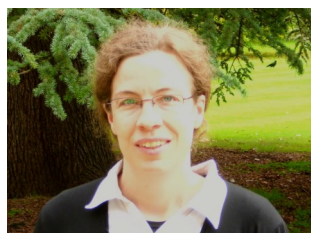
Welcome to the first edition!

Welcome to the first edition of the new PDE CDT and OxPDE newsletter. We will be producing an issue once-a-month during term-time in order to keep members up to date with the latest courses, events and visitors to the CDT and research group. If you have any ideas or suggestions for the newsletter, or if you would like to contribute a short piece, please do let us know!

Organizing YRM 2015

From October 2014 until August 2015 I've been involved in the organization of the Young Researchers in Mathematics 2015 Conference. This international event is hosted every year by a British University and it gives to doctoral students, Postdocs and other students aiming to do research in Maths (and related fields) the opportunity to get in touch, talk about their interests and share their ideas on almost any field of Maths. Being part of the conference committee was a great opportunity to gain experience about the organization of such an important event. Approximately 170 people participated at the conference this year and all those who expressed an interest to give a brief talk on their research had the chance to do so. This required careful planning and part of the committee was mostly responsible for this aspect, as well as organizing contributed and special talks by distinguished speakers. However, there was a lot more to do! We had to keep in touch with sponsors and other mathematical institutions supporting this event, to deal with funding, finance and balance, to manage accommodation and catering and to create a conference poster and a website and so on. Part of my commitment was to promote the event to other relevant institutions, such as the European Mathematical Society and national societies. During the weeks preceding the conference and after it actually started, essentially all committee members were concentrated on chairing contributed and plenary sessions, helping our delegates and speakers in case of need, or simply checking that everything was going well. I have to say that it was a great pleasure to work in such a versatile, friendly and collaborative team and I am sure that the experience I gained will be very useful in any future group work.

Luca Alasio, PDE CDT student

New Faculty Member: Melanie Rupflin

The focus of my research is the study of PDEs arising from problems in differential geometry, and I am, in particular, interested in geometric evolution equations such as harmonic map flow, mean curvature flow, Ricci flow etc..
The basic idea of such geometric flows is to deform a geometrical object towards 'an optimal state'. One particular question I am considering in this context is how to best deform a surface in order to decrease its area and to obtain, in the end, a minimal surface, e.g. with given boundary curves or with certain prescribed topological properties.
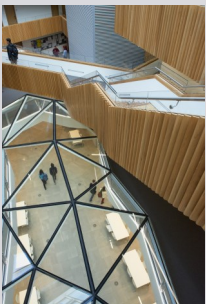
Teaching and Learning PDEs in Oxford

The existence and uniqueness of the Centre for Doctoral Training in Partial Differential Equations (PDE CDT) at the University of Oxford is gaining rapid recognition within the scientific community. Its aim is to train mathematicians with a deep expertise in both analysis and applications of PDEs set to unusually high standards. This rigorous 4-year programme, consisting of core courses, topic courses, research projects and thesis research, is designed for the very best students to become leading scholars in PDEs. It was my pleasure and honour to have the opportunity to give a topic course entitled "Bifurcation Theory in PDEs" during the 2015 Trinity Term. To interact with the brightest students, in and out of the classroom, was an extraordinary experience. The intellectual exchanges were both challenging and rewarding, embodying the teaching/learning process at the highest level. The seemingly impossible task of covering the basic theory and groundwork within only 16 hours was accomplished, owing to the solid mathematical foundations of the students in analysis, algebra, and geometry, which allowed them to grasp the essential concepts and to progress to advanced topics at a rapid pace. The students and instructors were able to reach the common goal of exploring the wonderland of bifurcation theory without the obstacles and constraints present in a typical classroom setting. In addition, I benefitted greatly from various engaging and productive discussions with the faculty members of the Mathematical Institute, especially Professor John Ball, who sat through all classes and provided invaluable input.

Besides teaching, I also enjoyed many other activities at the Institute: research meetings, lectures, workshops, seminars, the spring retreat, and numerous stimulating discussions during coffee breaks under the glass roof of the central atrium with a breathtaking panoramic view of the magnificent Radcliffe Observatory, which makes one ponder the past and future, mathematics and the universe...

Yichao Chen, University of Houston
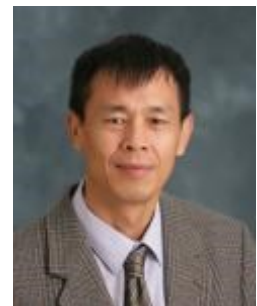
Upcoming Seminars

We have an exciting mix of talks this term starting with a talk on a free boundary value problem by our PIRE visiting postdoc, Emanuel Indrei. During the term our speakers will cover further topics ranging from the calculus of variations to fluid mechanics, continuum mechanics and conservation laws. Don't forget the **new time** for the PDE seminar series is **4pm on Mondays** and the PDE CDT Lunchtime seminar series is still at **midday on Thursdays**.

12 October-Bianca Stroffolini (Naples)

Tba

15 October-tba

Tba

19 October-Emanuel Indrei (CMU)

The tangential touch problem for fully nonlinear elliptic operators

22 October-Filip Rindler (Warwick)

Tba

26 October-Tobias Lamm (Karlsruhe Institute of Technology)

Tba

29 October-Eleonora Cinti (WIAS Berlin)

Quantitative flatness results for nonlocal minimal surfaces in low dimensions

Full listing at www.maths.ox.ac.uk/events