

The purpose of the conference is to provide researchers working in harmonic analysis, quasiconformal mappings or geometric measure theory with a scientific event designed to promote a deep interaction between the three subjects.

When the theory of quasiconformal mappings reached some maturity, its strong relation to real analysis (in particular to Calderón-Zygmund theory, through its connection with the Beurling transform) became apparent. In the past two decades one has realised that this relation is even more intimate than it was expected, through the work on area distortion, connection with PDEs etc. In particular, area distortion is related to the precise value of the norm of the Beurling transform as an operator on  $L_p$ , and this has led to connections with probability theory (martingales) and control theory (the Bellman function). On the other hand, the mapping properties of Calderón-Zygmund operators of last generation, in which the underlying measure is a rather general measure on Euclidean space, has shown to be intimately connected to rectifiability (uniform rectifiability) and thus to geometric measure theory. Recently a new connection between geometric measure theory and quasiconformal mappings has also emerged, when studying removability problems for quasiregular functions.

The main goal of the conference is to bring together the leading worldwide experts in each of the subjects listed above and young researchers, including postdocs and advanced doctoral students working in related topics. One expects that new perspectives will arise, new problems will be raised and new light will be shed on old open problems.

The themes dealt with in the conference will be:

1. New developments on distortion of sets under quasiconformal mappings (Lacey, Sawyer, Uriarte)
2. Quasiconformal mappings and PDE, in particular the Calderón inverse problem (Astala, Faraco, Iwaniec, Päivärinta, Zhong)
3. Removability and quasiconformal mappings (Astala, Clop, Mateu, Orobitg, Tolsa)
4. Functions of finite distortion and hyperelastic deformations (David, Iwaniec, Koskela, Saksman)
5. Metric measure spaces, Poincaré's inequality and harmonic functions (Hajlasz, Koskela, Zhong)

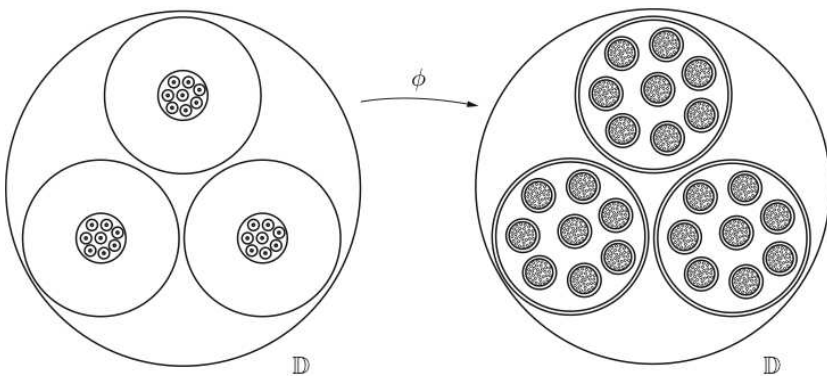
## RESEARCH CONFERENCES

ESF Mathematics Conference in Partnership with EMS and ERCOM

# Harmonic Analysis, Geometric Measure Theory and Quasiconformal Mappings

CRM - Centre de Recerca Matemàtica, Bellaterra ■ Spain

14-20 June 2009



**Chair:** Prof. Pertti Mattila, *University of Helsinki, Finland*

### Invited Speakers will include:

Kari Astala, *U. of Helsinki, FI*  
 Pascal Auscher, *U. Paris-Sud, FR*  
 Rodrigo Bañuelos, *Purdue U., US*  
 Luca Capogna, *U. of Arkansas, US*  
 Guy David, *U. Paris Sud, FR*  
 Daniel Faraco, *U. Autónoma de Madrid, ES*  
 John B. Garnett, *U. of California at Los Angeles, US*  
 Piotr Hajlasz, *U. of Pittsburgh, US*  
 Alex Iosevich, *U. of Missouri-Columbia, US*  
 Tadeusz Iwaniec, *Syracuse U., US*

Loredana Lanzani, *U. of Arkansas, US*  
 Gaven Martin, *Massey U., NZ*  
 Jani Onninen, *Syracuse U., US*  
 Fulvio Ricci, *Scuola Normale Superiore de Pisa, IT*  
 Eero Saksman, *U. of Helsinki, FI*  
 László Székelyhidi, *Bonn U., DE*  
 Tatiana Toro, *U. of Washington, US*  
 Rodolfo Torres, *U. of Kansas, US*  
 Alexander Volberg, *Michigan State U., US*  
 Xiao Zhong, *Jyväskylä Universitet, FI*

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**Closing Date for Application 23 March 2009**

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