

May – August 2012

Trimester Program on
**Mathematical challenges of materials science
and condensed matter physics:
From quantum mechanics through statistical
mechanics to nonlinear pde**

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Organizers: Sergio Conti, Richard James, Stephan Luckhaus, Stefan Müller, Manfred Salmhofer, Benjamin Schlein

There is by now a good understanding of matter on the scale of single atoms. Many interesting physical effects as well as key materials properties depend, however, crucially on the collective behaviour of a huge number of atoms. A major challenge for mathematics, theoretical physics and materials science is to make rigorous and efficient connections between the atomistic description and collective effects. The purpose of this interdisciplinary program is to identify and study key problems where mathematics can provide new insights.

Confirmed participants are:

Antonio DeSimone (SISSA, Trieste)
Laszlo Erdős (LMU Munich)
Gero Friesecke (TU Munich)
Jozsef Fritz (Budapest)
Alessandro Giuliani (Rome III)
Roman Kotecky (Prague/Warwick)
Michael Ortiz (Caltech)
Errico Presutti (Rome II)

Call for participation: The Hausdorff Research Institute offers visiting positions for the whole period of the trimester program (for senior scientists, postdocs and PhD students). The deadline for applications is November 15, 2011. Please send applications (including CV and, for postdocs and PhD students, a letter of recommendation) preferably using our online application form at <http://www.him.uni-bonn.de/mathematical-challenges> or by e-mail to the Director of HIM, Prof. Dr. Wolfgang Lück (application-mc@him.uni-bonn.de). In addition numerous fellowships for shorter periods are available.