Colloquium

The Institute Colloquium: Effective behavior of random media

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Host:

Heterogeneous media, like a sediment, are often naturally described in statistical terms. How to extract their effective behavior on large scales, like the permeability in Darcy's law, from the statistical specifications? A practioneers numerical approach is to sample the medium according to these specifications and to determine the permeability in the Cartesian directions by imposing simple boundary conditions. What is the error made in terms of the size of this ``representative volume element''?
Our interest in what is called ``stochastic homogenization'' grew out of this error analysis. In the course of developing such an error analysis, connections with the regularity theory of elliptic equations and with concepts from statistical mechanics have emerged in a clearer way. We also gained an understanding of the structure of fluctuations of any solution: On large scales, the asymptotically Gaussian fluctuations are characterized by a single tensor-valued white noise, which also be extracted from the representative volume method.

Monday, December 5, 2016 04:00pm - 05:15pm

Raiffeisen Lecture Hall, Central Building

This invitation is valid as a ticket for the ISTA Shuttle from and to Heiligenstadt Station. Please find a schedule of the ISTA Shuttle on our webpage: https://ista.ac.at/en/campus/how-to-get-here/ The ISTA Shuttle bus is marked ISTA Shuttle (#142) and has the Institute Logo printed on the side.

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