



京都大学数理解析研究所, 共同研究事業 (公開型)

偏微分方程式と確率過程に現れる均質化理論
Homogenization in PDE and Stochastic Processes

Location: Room 111 (RIMS, Kyoto University)
Period: August 24 (Mon)–August 26 (Wed), 2026
Organizers: David Croydon (RIMS)
Takashi Kumagai (Waseda Univ)
Hiroyoshi Mitake (Waseda Univ)

Program

• **August 24 (Mon)**

- 9:30–10:10 Zhen-Qing Chen (University of Washington)
Quantitative Homogenization of PDEs with Neumann boundary conditions: a probabilistic approach
- 10:20–11:00 Elena Kosygina (Baruch College)
Stochastic homogenization of viscous Hamilton-Jacobi equations in 1d: open problems
- 11:00–11:30 Coffee Break
- 11:30–12:10 Xiaoqin Guo (University of Cincinnati)
Quantification of ergodicity for Hamilton–Jacobi equations in a dynamic random environment
Lunch Break
- 14:00–14:40 Tianling Jin (Hong Kong University of Science and Technology)
A Liouville theorem for convex functions with periodic Monge-Ampere measure
- 14:50–15:30 Son Tu (Baylor University)
Birkhoff Average Estimates and Applications to Quasi-Periodic Homogenization
- 15:30–16:00 Coffee Break
- 16:00–16:40 Rong Lei (Tohoku University)
Emergence of an unsaturated Darcy-type law and a Richards-type equation via homogenization of a Stokes–Cahn–Hilliard system

• **August 25 (Tue)**

- 9:30–10:10 Alessandra Faggionato (Sapienza University of Rome)
Equilibrium Fluctuations of the SSEP on Random Graphs with Conductances
- 10:20–11:00 Ryoki Fukushima (University of Tsukuba)
Quenched moderate deviations for random walk in random scenery
- 11:00–11:30 Coffee Break
- 11:30–12:10 Chenlin Gu (Tsinghua University)
Scaling limit of additive functionals for reversible non-gradient exclusion process:
critical cases
Lunch Break
- 14:00–14:40 Mitsuo Higaki (Kobe University)
Navier’s wall law for viscous flows in randomly rough domains
- 14:50–15:30 Panrui Ni (Waseda University)
Quantitative homogenization of first-order ODEs
- 15:30–16:00 Coffee Break
- 16:00–16:40 Satomi Watanabe (Kyoto University)
Arm events of percolation with impurities

• **August 26 (Wed)**

- 10:00–10:40 Sebastian Andres (Technische Universität Braunschweig)
Anchored Nash inequalities and heat kernel bounds for random conductance models with long-range jumps
- 10:40–11:00 Coffee Break
- 11:00–11:40 Takuya Sato (University of Tokyo)
Quantitative homogenization for obstacle problems of convex Hamilton-Jacobi equations
Lunch Break
- 13:00–13:40 Kohei Hayashi (University of Osaka)
Fluctuating hydrodynamics for a chain of nonlinear stochastic oscillators
- 13:50–14:30 Goro Akagi (Tohoku University)
Optimal rate of convergence to some degenerate asymptotic profiles for fast diffusion

This workshop is partially supported by

- ▷ JSPS Grant-in-Aid for Scientific Research (A), 22H00099 (PI: Takashi Kumagai)
- ▷ JST Moonshot Research and Development Program, JPMJMS25A5, Project Manager: Tohru Ozawa (Waseda University), PI: Takashi Kumagai (Waseda University)
- ▷ JSPS Grant-in-Aid for Scientific Research (C), 26K06861 (Hiroyoshi Mitake)