Emergent Research:
The PIMS Postdoctoral Fellow Seminar

May 24, 2023 | 9:30am Pacific

Pacific Institute *for the* Mathematical Sciences

Convergence of resistances on generalized Sierpinski carpets

ABSTRACT:
The locally symmetric diffusions, also known as Brownian motions, on generalized Sierpinski carpets were constructed by Barlow and Bass in 1989. On a fixed carpet, by the uniqueness theorem (Barlow-Bass-Kumagai-Teplyaev, 2010), the reflected Brownians motion on level n approximation Euclidean domain, running at speed $\lambda_n \asymp \eta^n$ with η being a constant depending on the fractal, converges weakly to the Brownian motion on the Sierpinski carpet as n tends to infinity. In this talk, we show the convergence of λ_n/η^n. We also give a positive answer to a closely related open question of Barlow-Bass (1990) about the convergence of the renormalized effective resistances between two opposite faces of approximation domains. This talk is based on a joint work with Zhen-Qing Chen.

Shiping Cao
PIMS PDF, UWashington

SPEAKER BIO:
Shiping Cao obtained his Ph.D. at Cornell University in August 2022, where he studied the Dirichlet forms and diffusion processes on fractals under the supervision of Robert S. Strichartz. He is currently a postdoctoral scholar at the University of Washington working with Zhen-Qing Chen. His current research project is on the homogenization of random environments on Sierpinski carpets. He is also interested in other stochastic models on fractals, like random spanning trees and self-avoiding random walks.

For more information and registration:
https://www.pims.math.ca/seminars/PIMSPDF

ABOUT PIMS PDF SEMINARS:
PIMS ongoing lecture series featuring our Postdoctoral Fellows every three weeks. You will have the opportunity to connect with emerging research in the mathematical sciences from a PIMS Postdoctoral Fellow. PIMS PDFs are amongst the top young researchers in Canada, and this is an excellent opportunity to learn about them, and their work.