Scaling Transition for Long-Range Dependent Random Fields

SPEAKER: Donatas Surgailis, Vilnius University
TIME: 11:00 am - 12:00 pm, Tuesday, April 30, 2019
VENUE: Room 264, Geography Building, Zhongbei Campus, ECNU

ABSTRACT

The notion of scaling transition for stationary random field (RF) on $\mathbb{Z}^d$ was introduced and studied (2015-2019) by the author and his collaborators (Donata Puplinskaite and Vytaute Pilipauskaite). The scaling limits of RF are taken over rectangles in $\mathbb{Z}^d$ whose sides grow as $O(\lambda^{\gamma_i}), \lambda \to \infty$ for any fixed $\gamma_i > 0, i = 1, \ldots, d$. For $d=2$ a scaling transition occurs at $\gamma_0 > 0$ if the scaling limits are different for $\gamma_1/\gamma_2 > \gamma_0$ and $\gamma_1/\gamma_2 < \gamma_0$ and do not depend on $\gamma_1, \gamma_2$ otherwise. It appears that scaling transition is a general phenomenon under long-range dependence (LRD) which occurs for various models of linear and nonlinear RFs including econometrics and telecommunications. The talk discusses some recent developments in this direction, including the structure and complete description of anisotropic scaling limits of linear LRD RFs on $\mathbb{Z}^3$.

BIOGRAPHY

Donatas Surgailis received his Doctor of Physics and Mathematics degree in 1981 from Vilnius University. From 1987 until 2016 he was a Professor at Vilnius University, retired in 2016. He was a Visiting Professor at Case Western Reserve University (Cleveland), Michigan State University, IMPA (Rio de Janeiro), ENSAE (Paris), Lille 1 University. His main research interests are stochastic processes and random fields, long-range dependence, self-similar processes, time series, and statistical inference.