

DALHOUSIE MATHEMATICS COLLOQUIUM

Monday November 5 2018, 3:30 pm, Chase 319

Speaker: Sascha Troscheit
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Galton-Watson trees: Big, small, and sometimes continuous

Galton-Watson trees are trees that arise from a simple probabilistic model that was first used to describe the extinction of family names in patrilineal family name systems. The model is based on the premise that each individual (node in the tree) has a random number of descendants (sub-nodes/children) which is chosen independently from all other individuals but according to the same distribution. These trees (and their Gromov boundary) arise in a variety of fields and can be used as a model for stochastic self-similarity when endowed with a suitable metric. In this talk, I will shed some light on the large and small scale behaviour of such trees under a variety of metrics: Some give compact fractals in \mathbb{R}^d , whereas others give abstract unbounded random metric spaces. I will exhibit dimension theoretic properties that arise from statistical properties and present results on quasi-isometries between random metric spaces. Given time, I will talk about a special random metric space that one can obtain by rescaling and its unusual dimension theoretic property: It “looks” planar, but cannot “live” in \mathbb{R}^d .