

MULTIPLICATIVE CASCADES AND RANDOM METRICS ON GRAPHS

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Take a “diamond” graph of four unit length edges, linking points A and B by two parallel length two paths. Now, let us iteratively repeat the following procedure: we simultaneously replace all the edges of a graph already built by an appropriately rescaled copy of the diamond graph. Namely: for each edge e of length l_e we pick a random constant c_e (all such constants being i.i.d.), and replace it with the copy of a diamond graph with edges of length $c_e l_e$. Now, let us consider the limit of such metric spaces; what would it look like? In particular, does such a limit exist at all?

I will speak on our joint results with M. Khristophorov and M. Triestino in this direction. I will also explain where this question comes from: random metrics on surfaces, a topic, studied by many people (just to mention a few milestones: Chassaing-Schaeffer, 2002, Le Gall and Miermont, 2011; series of works by Sheffield and Miller, for which they have recently received the Clay Institute award).