Abstract:
The first characterization of groups by an asymptotic description of random walks on their Cayley graphs dates back to Kesten's criterion of amenability. I will first review some connections between the random walk parameters and the geometry of the underlying groups. I will then discuss a flexible construction that gives solution to the inverse problem (given a function, find a corresponding group) for large classes of speed, entropy and return probability of simple random walks on groups of exponential volume growth. Based on joint work with Jeremie Brieussel.