

The tail asymptotics of the Brownian signature

Friday, October 20, 2017 2:00 PM (45 minutes)

In the groundbreaking work of B. Hambly and T. Lyons (Uniqueness for the signature of a path of bounded variation and the reduced path group, *Ann. of Math.*, 2010), it has been conjectured that the geometry of a tree-reduced bounded variation path can be recovered from the tail asymptotics of its associated sequence of iterated path integrals. While this conjecture is still remaining open in the general deterministic case, in this talk we investigate a similar problem in the probabilistic setting for Brownian motion. It turns out that a martingale approach applied to the hyperbolic development of Brownian motion allows us to extract useful information from the tail asymptotics of Brownian iterated integrals, which can be used to determine the Brownian rough path along with its natural parametrization uniquely. This in particular strengthens the existing uniqueness results in the literature.

Presenter: GENG, Xi