

**Missing the hole: Conformally invariant random curves in ring domains,
elliptic functions, and random simple loops**

Abstract: There is only one measure on simple curves which is conformally invariant, domain Markovian, and a restriction measure---the conjectured scaling limit of the self-avoiding random walk. I will explain why there is only one and then study this measure in ring domains. Here, elliptic functions play a prominent role, and their interplay with the Markovian property leads to a partial differential equation with doubly periodic coefficients for certain intersection probabilities. These probabilities turn out to be important for the conformally invariant measure on simple loops recently introduced by W. Werner. Throughout my talk, I will emphasize concepts so that the talk should be accessible to non-specialists.