

Institute for Applied Mathematics, Bonn University

## Oberseminar Stochastik

Thursday, 15 December 2022, 16:30

Lipschitz-Saal (LWK 1.016)

**Nathanael Berestycki**

Universität Wien

## Weyl law in Liouville quantum gravity

Can you hear the shape of LQG? We obtain a Weyl law for the eigenvalues of Liouville Brownian motion: the  $n$ -th eigenvalue grows linearly with  $n$ , with the proportionality constant given by the Liouville area of the domain (times a certain deterministic constant depending on  $\gamma \in (0, 2)$ ). At the heart of the proof we obtain estimates of independent interest on the small-time behaviour of the on-diagonal heat kernel. Interestingly, we show that the scaled heat kernel displays nontrivial pointwise fluctuations, which however vanish when integrating over a domain. This is joint work in preparation with Mo-Dick Wong (Durham).