

## There is no invariant cyclically monotone Poisson matching in $2d$

*Friday, 26 November 2021 16:00 (45 minutes)*

The optimal matching problem is a classical random variational problem that received interest in the last 30 years. We show that there exists no cyclically monotone invariant matching of two independent Poisson processes in the critical dimension  $d = 2$ . Our argument relies on a recent harmonic approximation theorem together with the two-dimensional local asymptotics for the bipartite matching problem, for which we provide a new self-contained proof based on martingale arguments.

Joint work with M. Huesmann (WWU Münster) and F. Otto (MPI Leipzig)

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**Session Classification:** main contributions