

**ICTS**

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TATA INSTITUTE OF FUNDAMENTAL RESEARCH

ICTS Seminar

- Title** : Exceptional times when bigeodesics exist in dynamical last passage percolation
- Speaker** : Manan Bhatia (Massachusetts Institute of Technology, USA)
- Date** : Wednesday, 11 June 2025
- Time** : 3:00 PM (IST)
- Abstract** : Exponential last passage percolation (LPP) is a canonical planar directed model of random geometry in the KPZ universality class where the Euclidean metric is distorted by i.i.d. noise. One can also consider a dynamical version of LPP, where the noise is resampled at a constant rate, thereby gradually altering the underlying geometry. In fact, LPP is known to be noise sensitive in the sense that running the dynamics for a microscopic amount of time leads to a macroscopic change in the geometry. In this talk, we shall discuss the question of the existence of exceptional times in dynamical LPP at which bi-infinite geodesics exist. For static LPP, bi-infinite geodesics almost surely do not exist as was shown in Basu-Hoffman-Sly '18 and Balasz-Busani-Seppalainen '19. For dynamical LPP, we show that such exceptional times are at least very close to existing; namely, we give a subpolynomial lower bound $((1/\log n))$ on the probability that there is an exceptional time $t \in [0, 1]$ at which the origin lies on a geodesic of length n . In the other direction, for a dynamics on the related Brownian LPP model, we analyse 'geodesic switches' to establish that the corresponding set of exceptional times almost surely has Hausdorff dimension at most $1/2$ -- we expect the correct dimension to be 0 as can be gathered by an intuitive non-rigorous argument.
- Venue** : Feynman Lecture Hall
Offline Mode