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## **(I) Formation and dynamics of extreme mass ratio inspirals with environmental effects**

*Tuesday 7 June 2022 13:45 (30 minutes)*

In this talk I will discuss relevant environment effects (i.e., accretion disk, tidal gravitational field from close objects) that influence the formation and dynamics of extreme-mass-ratio inspirals (EMRIs), which are important sources for space borne gravitational wave detectors such as LISA. I will show that disk-assisted EMRIs may be more commonly seen by LISA. They can be distinguished from EMRIs formed through cluster multi-body scattering by eccentricity measurements. The disk force and tidal gravitational field from nearby objects may also leave observable imprints on the gravitational waveform of the EMRIs. With environmental effects properly accounted for, multi-messenger observations of EMRIs provide new opportunities in probing dark matter, primordial black holes and accretion flows at galactic centers.

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