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## Testing the dispersion of gravitational waves using b-EMRI systems

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Binary extreme-mass-ratio inspiral (b-EMRIs) consists of a stellar-mass binary black hole orbiting around a supermassive massive black hole. Such a three-body system emits simultaneously low-frequency (milli-Hertz) gravitational waves and high-frequency (hundred Hertz) ones. Therefore, it is ideal for testing the dispersion of gravitational waves. In this talk, I will show how such systems could be produced naturally in astrophysical environments, via the processes of either tidal capture or planetary-like migration. By coordinating ground-based and future space-borne gravitational-wave observatories, we could constrain the dispersion of gravitational waves, and hence the mass of gravitons, to a precision that is ten times better than the current limit.

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