General Relativity and Quantum Cosmology

Towards Tests of Alternative Theories of Gravity with LISA

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The inspiral of stellar compact objects into massive black holes, usually known as extreme-mass-ratio inspirals (EMRIs), is one of the most important sources of gravitational-waves for the future Laser Interferometer Space Antenna (LISA). Intermediate-mass-ratio inspirals (IMRIs are also of interest to advance ground-based gravitational-wave observatories. We discuss here how modifications to the gravitational interaction can affect the signals emitted by these systems and their detectability by LISA. We concentrate in particular on Chern-Simons modified gravity, a theory that emerges in different quantum gravitational approaches.

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