Proposed abstract:

Testing Gravitational Physics with Space-based Gravitational-wave Observations.

Gravitational wave observations provide exceptional and unique opportunities for precision tests of gravitational physics, as predicted by general relativity (GR). Space-based gravitational wave measurements, with high signal-to-noise ratios and large numbers of observed events may provide the best-suited gravitational-wave observations for testing GR with unprecedented precision. These observations will be especially useful in testing the properties of gravitational waves and strong-field aspects of the theory which are less relevant in other observations. We review the proposed GR test based on observations of massive black hole mergers, extreme mass ratio inspirals, and galactic binary systems.