Contribution ID: **63** Type: **poster**

A Tunable Resonant Detector for Low Frequency Gravitational Waves

Tuesday, 24 May 2016 18:00 (0 minutes)

All practical proposals to detect low frequency gravitational waves in the frequency range 0.001 Hz to 0.1 Hz involve multi-satellite spaceborne devices with laser interferometry over very large distances. Here I outline the concept study of a single resonant interferometer detector operating within a single drag-free satellite, capable of strain sensitivity better than 10^-20/√(Hz) for gravitational waves in the frequency range 0.001 Hz to 0.1 Hz. The resonance frequency and bandwidth are optically tunable, enabling continuous tracking of slowly evolving massive BH binary sources emitting in this frequency range. The interferometer operates in the Fabry-Perot mode with weakly coupled mass-mirrors with low resonance frequency and high Q, and a near-resonant auxiliary laser tunes the frequency using optical spring effect. The F-P cavity and moderate Q enables resonant strain sensitivity about 10^-20/√(Hz) and tunability enables resonant tracking for long integration.

Primary author: Prof. UNNIKRISHNAN, CS (Tata Institute of Fundamental Research, Mumbai, India)

Presenter: Prof. UNNIKRISHNAN, CS (Tata Institute of Fundamental Research, Mumbai, India)

Session Classification: Poster Session