



# ***SEMINAR ANNOUNCEMENT***

## **“The effect of gravitational waves on Casimir forces: A novel detection strategy on the nanoscale”**

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In recent years, there has been growing interest in applications of the Lifshitz theory to the case in which the dispersion pressure is manipulated by a suitable medium filling the gap between two - possibly different - parallel plane slabs. This has led, for instance, to successful observations of *repulsive* Casimir forces. In this seminar, we shall discuss the case in which gap properties are altered not by a substance but by gravitational waves, described within the optical medium analogy of general relativity, traveling through an ideal Casimir cavity with perfectly conducting walls. After obtaining estimates of the dispersion force time-modulation due to gravitational waves, we shall consider recently demonstrated Casimir force parametric amplification schemes based on mechanical pumping. We shall also mention promising alternatives to observe this effect in other systems driven by dispersion forces, such as oscillating cores in telescoping multiwalled nanotubes. We shall close with comments on the significance of such a suggested micro to nano-scale gravitational detection approach within the landscape of present gravitational wave detectors operating internationally on scales larger by 9-12 orders of magnitude and we shall consider some implications in astrophysics, cosmology, and experimental quantum gravity.

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