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## A Global Network of Cavities to Search for Gravitational Waves (GravNet): A novel scheme to hunt gravitational waves signatures from the early universe

*Wednesday 23 August 2023 17:10 (20 minutes)*

The idea of searching for gravitational waves using cavities in strong magnetic fields has recently received significant attention. In particular, cavities with rather small volumes that are currently used to search for axion-like particles are discussed in this context. We propose here a novel experimental scheme enabling the search for gravitational waves with MHz frequencies and above, which could be caused for example by primordial black hole mergers. The scheme is based on synchronous measurements of cavity signals from several devices operating in magnetic fields at distant locations. Although signatures of gravitational waves may be present as identifiable signal in a single cavity, it is highly challenging to distinguish them from noise. By analyzing the correlation between signals from multiple, geographically separated cavities, it is not only possible to increase substantially the signal over noise ratio, but also to investigate the nature and the source of those gravitational wave signatures. In the context of this talk, a first demonstration experiment with one superconduction cavity has been conducted, which is the basis of the proposed data-analysis approaches. The prospects of GravNet (Global Network of Cavities to Search for Gravitational Waves) are outlined in this talk.

### Collaboration / Activity

GravNet

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