

Intertwining Axion and gravitational waves, generations and detection.

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Firstly, we discuss how the beyond the Standard Model hypothetical particle, the axion, can produce gravitational waves through several different mechanisms either in the astrophysical setting or the early universe. Then we present our recent new detection proposals for axions/gravitational waves using cryogenic quantum transport technology. The electric signal is enhanced by the high-quality factor of a resonant LC circuit and then amplified and detected by the cryogenic measurement technique. We demonstrate that this setup has promising sensitivity for axions with mass from kHz to GHz, and a similar device can also be used for high-frequency gravitational wave detection with the same frequency range.

Primary author(s) : SUN, Sichun (Beijing Institute of Technology)

Presenter(s) : SUN, Sichun (Beijing Institute of Technology)