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Ultra-light dark matter searches with gravitational wave detectors

Friday, October 3, 2025 10:15 AM (45 minutes)

Dark matter remains one of the most intriguing mysteries in our understanding of the universe. Recent theoretical advancements have motivated new experimental strategies to detect ultralight dark matter particles. This talk explores innovative methods for searching for these elusive particles using gravitational wave detectors. I will discuss how ultralight dark matter may generate detectable signals, either through direct interactions with detectors or through the emission of gravitational waves. Focusing on gravitational wave observatories such as LIGO, Virgo, and KAGRA, I will summarize recent observational efforts and highlight emerging possibilities for uncovering the nature of this fundamental component of the universe.

Presenter: PICCINNI, Ornella (Australian National University)