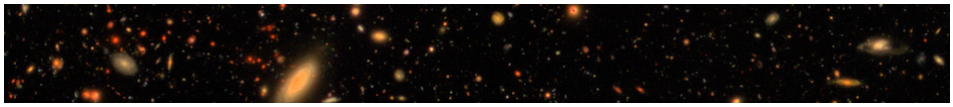

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A dark photon search with a gravitational wave detector and the effect of the relative motion of detectors

Wednesday 16 October 2024 10:10 (20 minutes)

The search for dark matter using gravitational wave detectors is attracting significant attention. These detectors have extremely high sensitivity to small displacements, which could be used to detect interactions with ultralight dark matter. Different models predict that dark matter interacts with gravitational wave detectors through various mechanisms. This sensitivity to displacement could allow the detection of dark matter signals. In this study, we discuss methods to detect dark matter signals in data from gravitational wave detectors and how to set upper limits when no candidate signals are found. When estimating these limits, it is essential to account for the relative velocity between the detectors and dark matter. We propose an upper limit estimation method that incorporates this factor.

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