

Abstract Submitted
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Gravitational waves in axion inflation: implications for CMB and small-scales interferometer measurements¹ CANER UNAL, MARCO PELOSO, Univ of Minnesota - Twin Cities, LORENZO SORBO, University of Massachusetts, Amherst, JUAN GARCIA-BELLIDO, Autonomous University of Madrid — A strong experimental effort is ongoing to detect the primordial gravitational waves (GW) generated during inflation from their impact on the Cosmic Microwave Background (CMB). This effort is motivated by the direct relation between the amplitude of GW signal and the energy scale of inflation, in the standard case of GW production from vacuum. I will discuss the robustness of this relation and the conditions under which particle production mechanisms during inflation can generate a stronger GW signal than the vacuum one. I will present a concrete model employing a coupling between a rolling axion and a gauge field, that can produce a detectable GW signal for an arbitrarily small inflation scale, respecting bounds from back-reaction, perturbativity, and the gaussianity of the measured density perturbations. I will show how the GW produced by this mechanism can be distinguished from the vacuum ones by their spectral dependence and statistical properties. I will finally discuss the possibility of detecting an inflationary GW signal at terrestrial (AdvLIGO) and space (LISA) interferometers. Such experiments are sensitive to the modes much smaller than the ones corresponding to CMB and Large Scale Structure, presenting a unique observational window on the final stages of inflation.

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