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Ultra-high frequency gravitational waves from alpha-attractor models of inflation

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We consider primordial gravitational waves induced by large density perturbations generated by inflation in the very early universe. Cosmological alpha-attractors stand out as particularly compelling models to describe inflation, naturally meeting tight observational bounds from cosmic microwave background (CMB) experiments. We investigate alpha-attractor potentials in presence of an inflection point. The curvature perturbation is enhanced at high frequencies, which can lead to primordial black holes production and second-order gravitational waves. Consistency with the current CMB measurements implies that PBHs can only be produced with masses smaller than 10^8 g and are accompanied by ultra-high frequency gravitational waves, with a peak expected to be at frequencies of order 1MHz or above.

Presenter: IACCONI, Laura (Institute of Cosmology and Gravitation (University of Portsmouth))

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