

Whispers from the Dark Universe - Particles & Fields in the Gravitational Wave Era

CLUSTER OF EXCELLENCE
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WHISPERS FROM THE DARK UNIVERSE – PARTICLES & FIELDS IN THE GRAVITATIONAL WAVE ERA

HELMHOLTZ

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Kinetic Axion from non-minimally coupled PQ Field

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Axion Kinetic Misalignment can be generated by higher-order operators that explicitly break the PQ symmetry at very high energies. This results in a kick in the angular direction of the PQ field, causing a delay in the onset of axion oscillations. For the higher-order operator to be relevant, the PQ radial mode must reach very high values. We explore the possibility that a non-minimally coupled PQ field, with a $\xi R |\Phi|^2$ term, combined with a stiff era, can generate the exact initial conditions for a Kinetic Misalignment Mechanism.

Primary authors: NATALE, Riccardo (DESY); MORGANTE, Enrico (U. Trieste & INFN)

Presenter: NATALE, Riccardo (DESY)

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