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GW forest from the string axiverse

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We study emission processes of gravitational waves (GWs) from string axions with various masses. First, we clarify the conditions of the onset of violent parametric amplification of inhomogeneous axions. Then, we investigate the fate of the instability with lattice simulations. We analyze GW production processes due to the axion dynamics and find the pre-oscillon formation stage is important for GW production. Finally, we argue that there appear peaks of GW spectrum at various frequencies, dubbed the GW forest. Thus, the string axiverse could be scientific target of the future multi-frequency gravitational wave observations.

Parallel Session

Cosmology and Gravitational Waves

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