

THEORY GROUP SEMINAR

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Xin Wang

Modular flavour symmetry: From fixed points to domain walls

Abstract: Modular invariance offers an appealing solution to the flavour puzzle. In this talk, I will present a unified perspective on modular flavour symmetry, linking flavour phenomenology to early Universe cosmology through the fixed points in the modular space. I will begin by reviewing the application of modular symmetry in flavour physics, demonstrating the importance of fixed points in explaining the flavour mixing patterns. I will then discuss how the modular stabilisation mechanism can drive the modulus towards these fixed points, providing a dynamical origin for the observed flavour parameters. Finally, I will focus on the cosmological consequences of this framework, with particular emphasis on modular domain walls. I will discuss their formation and collapse, showing that the resulting gravitational wave spectra offer a unique window to probe the modular flavour paradigm.

Dr. **Xin Wang** received his PhD in theoretical physics from the Institute of High Energy Physics (IHEP), Chinese Academy of Sciences in 2022. He subsequently conducted postdoctoral research at Peking University and the University of Southampton. His main research interests lie in particle physics, cosmology and astronomy, with a focus on the origin of neutrino masses and flavor mixing, the evolution of the early Universe, and astrometry-based detection of gravitational waves and dark matter.



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