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From symmetries to gravitational waves

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Phase transitions in the early universe provide a rich testing ground for fundamental symmetries and the generation of gravitational waves. In this talk, I will explore the connection between symmetry breaking, phase transitions, and the resulting gravitational wave signatures. I will present recent theoretical and numerical developments that shed light on the dynamics of these transitions, highlighting implications for gravitational wave observatories and beyond. Special attention will be given to the interplay between particle physics models and observable gravitational wave signals, offering new insights into the fundamental structure of the universe.

Authors: TIAN, Chi (Anhui University); BALAZS, Csaba (Monash University); WANG, Xiao (Monash University)

Presenter: BALAZS, Csaba (Monash University)

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