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Single-step first order phase transition and gravitational waves in a SIMP dark matter scenario

Tuesday 20 May 2025 18:15 (15 minutes)

We investigate the non-zero temperature dynamics of a sub-GeV dark matter scenario freezing-out via self-interactions. As a prototype, we take up the case of a scalar dark matter species undergoing $3 \to 2$ number changing annihilations catalysed by another scalar. We study the shape of the thermal potential of this scenario in a parameter region accounting for the observed relic abundance. An analysis reveals the possibility of a first order phase transition with bubble nucleation occurring at sub-GeV temperatures. This finding can be correlated with the typical sub-GeV masses in the framework. The gravitational wave spectra associated with such a phase transition is subsequently computed.

Mini Symposia (Invited Talks Only)

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Plenary (Invited talks only)

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