

Conformal Majoron-like models with supercooled phase transitions

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We study supercooled first-order phase transitions in a wide class of conformal Majoron-like $U(1)$ models that explain the totality of active neutrino oscillation data and feature testable signatures of Stochastic Gravitational Waves Background (SGWB) at the reach of both space and earth-based interferometers. We demonstrate that these models can produce a detectable GW signal in LISA and LIGO's O5 observing run, and are thus amenable to testing in a broad frequency range from mHz to 100 Hz. As a key point, We discuss the implications of the current LIGO-Virgo-Kagra (LVK) data in setting constraints on the mass scale of new scalars for the class of models under consideration.

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