

Sensitivity to Dark Sector Scales from Gravitational Wave Signatures

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We consider gravitational sound wave signals produced by a first-order phase transition in a theory with a generic renormalizable thermal effective potential of power law form. We find the frequency and amplitude of the gravitational wave signal can be related in a straightforward manner to the parameters of the thermal effective potential. This leads to a general conclusion; if the mass of the dark Higgs is less than 1% of the dark Higgs vacuum expectation value, then the gravitational wave signal will be unobservable at all upcoming and planned gravitational wave observatories. Although the understanding of gravitational wave production at cosmological phase transitions is still evolving, we expect this result to be robust.

Secondary category for the parallel session (optional)

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