

Gravitational Waves from Dark Sector Phase Transitions

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We discuss the phenomenological consequences of the decay of the meta-stable dark sector during the thermal expansion of the universe. We consider that the latent heat is much larger than the plasma energy density in the dark sector. In this case, the Lorentz factor of the bubble walls can be extremely large and the effect of bubble propagation after collisions can not be ignored. We use a 2048^3 lattice to simulate the evolution of the scalar fields in the dark sector and directly calculate the gravitational waves generated by the bubble collisions during the decay of the meta-stable vacuum in RD era. The results show that the IR region of the power spectrum of GW is flatter than the k^3 law produced by envelop approximation.

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