

What happens when supercooling is terminated by curvature flipping?

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The nature of a certain type of supercooled phase transition, where the supercooling is guaranteed to end due to the curvature of the potential at the origin experiencing a sign flip at some temperature. As the potential barrier is quickly vanishing at the temperature scale of the phase transition, is not immediately clear if critical bubbles are able to form. This clearly can have large implications for gravitational wave signals in such models. As such models are able to generate PBHs or dark matter in various ways, it's important to understand their possible tests.

To address this question, we perform lattice simulations of a scalar potential exhibiting supercooling, with a small barrier around the origin, and qualitatively determine the fate of the phase transition.

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