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The Supercooling Window at Weak and Strong Coupling

We study supercooled first order phase transitions which are typical of theories where conformal symmetry is (mainly) spontaneously broken. In these setups the fate of the flat direction parametrically depends on the explicit breaking of conformal symmetry. This need to be in a particular region to realize a supercooled first order phase transition. We identify the "supercooling window" in weakly coupled theories and strongly coupled CFTs and derive an analytical understanding of its boundaries. Mapping this parameter space allows us to paint a picture of how generic are early Universe phase transitions within the reach of present and future gravitational waves interferometers.

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