

Imminent test of quantum gravity with gravitational waves

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We present a model of the early Universe stemming directly from a UV-complete, nonlocal, unified theory of quantum gravity and matter. The problems of the hot big bang are solved by virtue of the conformal invariance enjoyed by the theory without the need to invoke inflation. Primordial tensor and scalar spectra are naturally generated by, respectively, quantum and thermal fluctuations. Relying on very few assumptions, the theory predicts a blue-tilted tensor spectrum feeding a primordial stochastic background observable by DECIGO, as well as a lower bound for the tensor-to-scalar ratio detectable by BICEP Array within the next 4 years.

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