

## Quantum Gravity and the Big Bang

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I will give a brief introduction to our current understanding of the history of the universe, and explain why quantum gravity effects are expected to be important in the very early universe. I will then present some of the main results of loop quantum cosmology, an approach that has been developed to study quantum gravity effects in the early universe. One key prediction is that the big-bang singularity, predicted by general relativity, is removed by quantum gravity effects and is replaced by a non-singular bounce that was preceded by a contracting phase. I will end by briefly discussing what future observations could potentially test loop quantum cosmology and its predictions.

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