

The Godel Spacetime and Closed Timelike Curves

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Kurt Godel in 1949 discovered an exact solution to the Einstein field equations (EFEs) of a uniformly rotating universe containing dust and a nonzero cosmological constant. It is interesting to note that the Godel spacetime generates closed timelike curves, thus posing challenges to the concept of causality. Given that causality is central to the formulation of physical theories, the prospect of time travel and the resulting paradoxes demands careful scrutiny. This presentation will address these critical issues in detail, in particular, in the context of the Godel spacetime.

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