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Time Travel Paradoxes and Entangled Timelines

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Before we can begin manufacturing time machines in our factory, we must consider whether those time machines could create time travel paradoxes, and if so, how these paradoxes might be resolved by existing or new laws of physics. We will first review the different types of time travel paradoxes and their proposed resolutions. Then we will present the results of our 3 recent papers (1911.11590, 2110.02448, 2303.07635) discussing different aspects of time travel paradoxes from the perspectives of both general relativity and quantum mechanics. We will argue that generic time travel paradoxes can only be resolved using the concept of parallel timelines, and suggest possibilities for how such timelines may manifest themselves.

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