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## Entanglement and Gravity

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Entanglement in Quantum Mechanics leads to a non-local correlation between two particles. The question arises as to whether changes in local gravity, or the equivalently the local background metric affects the correlation. There are several approaches to answering this question. This work discusses the treatment of the background gravity by using the equivalence principle to map it to a local acceleration. One can then use the concept of Rindler frames to treat the problem in the context of special relativity for uniform acceleration. A Thomas precession is shown to manifest for the particle spins. The effect of this on the maximal violation of a Bell inequality has been evaluated for a range of scenarios for systems of entangled particle pairs.

**Apply to be considered for a student award (Yes / No)?**

Yes

**Level for award (Hons, MSc, PhD, N/A)?**

PhD

**Main supervisor (name and email) and his / her institution**

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**Would you like to submit a short paper for the Conference Proceedings (Yes / No)?**

Yes

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