
Gravity and spinning particles: New experimental results and insights

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Abstract

Spin is the current of the charge of gravity and this insight suggests that purely spin-dependent phenomena in fundamental physics has a gravitational origin or link, just as all magnetic moment-dependent effects are of electrodynamical origin. I explore this theme and show that this is indeed the case. Starting from a classical experiment, analogous to Ampere's experiments on current-current interaction in electrodynamics, I demonstrate and discuss the large cosmic gravitomagnetic effects on spinning particles that leads to helicity dependent dynamics in some physical situations, though not violating the equivalence principle. In fact, one may argue that the validity of the equivalence principle is reinforced by these results.

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