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Frame-Dragging And ITS Tests With LASER Relativity And Geodesy Satellites

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Dragging of inertial frames, or frame-dragging, is an intriguing and fascinating phenomenon of Einstein's theory of General Relativity (GR) with relevant astrophysical implications. Some theories of gravitation, alternative to GR but in agreement with its post-Newtonian tests, predict a different result from GR for frame-dragging. However, frame-dragging tests, in agreement with GR, have been obtained with LARES (LAser RElativity Satellite), of the Italian Space Agency (ASI), successfully launched in February 2012, and with data from the LAGEOS (Laser Geodynamics Satellite), LAGEOS 2 and GRACE (Gravity Recovery and Climate Experiment) satellites. The accuracy of these tests reached a few parts in a hundred. The forthcoming ASI LARES 2 satellite, to be launched in 2021, together with data from the LAGEOS and GRACE Follow-On satellites, is aimed at frame-dragging tests with an accuracy of a few parts in a thousand.

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