

Astrodynamical Missions, Gravitomagnetism and Reference Frames

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Frame dragging is a crucial aspect of relativistic gravity and a manifestation of gravitomagnetism. After Lense-Thirring papers, over 100 years of theoretical investigation and experimental endeavor have established the precision in the astrodynamical measurement up to 1 % level by Gravity Probe B and LAGEOS-LARES mission. Planned/Proposed astrodynamical missions will measure and separate the gravitomagnetic effects from their other goals. This will further improve the precision of measuring gravitomagnetic effects experimentally. Ongoing large-scale rotation experiments on earth and underground are reaching the sensitivity of measuring gravitomagnetic effect. These developments will lead to establishing an ultra-precise reference frame based on Earth and the solar system. It will be useful for fundamental astronomy and space navigation.

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