Contribution ID: **483** Type: **Invited talk in the parallel session**

The measurement of the Lense-Thirring effect within the LARASE experiment

Monday, 5 July 2021 17:43 (18 minutes)

The LAser RAnged Satellites Experiment (LARASE), funded by the National Scientific Committee 2 (CSN2) of the Italian National Institute for Nuclear Physics (INFN) in the years 2013-2019, had among its main objectives that of verifying the gravitational interaction in the weak-field and slow-motion limit of General Relativity. Three geodynamic satellites: LAGEOS (NASA, 1976), LAGEOS II (ASI/NASA, 1992) and LARES (ASI, 2012) were taken as test masses of the experiment and their motions were carefully studied and compared with that of a timelike geodesic of General Relativity. Among the various measurements performed, the precession of the orbits of the satellites produced by the Earth's rotation, that is the precession induced by the angular momentum of our planet, has a particular consideration. This precession is generally known in the literature as Lense-Thirring effect or frame-dragging effect and proves that mass-energy currents affect the geometry of spacetime and, consequently, participate in the creation of its curvature. The results obtained in measuring the Lense-Thirring effect will be presented, highlighting the difficulties that must be overcome to the extent of a very small effect compared to the overall classical precession produced by the Earth's gravitational field and which acts on the same orbital elements subject to this relativistic precession. Emphasis will be given to the discussion of the systematic errors of the measurement, with special attention to gravitational perturbations.

Primary author: LUCCHESI, David (INAF/IAPS Tor Vergata and INFN ROMA2)

Presenter: LUCCHESI, David (INAF/IAPS Tor Vergata and INFN ROMA2)

Session Classification: Dragging is Never Draggy: MAss and CHarge Flows in GR

Track Classification: Precision Tests: Dragging is never draggy: MAss and CHarge flows in GR