

Spin parameters of LARES spectrally determined from Satellite Laser Ranging data

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Satellite Laser Ranging (SLR) is a powerful technique able to measure spin rate and spin axis orientation of the fully passive, geodetic satellites. This work presents results of the spin determination of LARES - a new satellite for testing General Relativity. SLR passes measured during one year from the launch were spectrally analyzed. Our results indicate that the initial spin frequency of LARES is $f_0=86.906$ mHz (RMS=0.539 mHz). A new method for spin axis determination, developed for this analysis, gives orientation of the axis at RA=12h22m48s (RMS=49m), Dec=-70.4o (RMS=5.2o) (J2000.0 celestial reference frame), and the clockwise (CW) spin direction. The half-life period of the satellite's spin is 214.924 days and indicates fast slowing down of the spacecraft.

LARES has been placed on a similar orbit to Ajisai, but demonstrates different spin dynamics. The spin behavior of the two geodetic satellites Ajisai and LARES will be compared in this presentation.

Keywords: LARES, Satellite Laser Ranging, Spin