

What could be learned from ring laser gyroscope about the Earth's rotation?

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The modern astrogeodetic techniques allow to determine the Earth's rotation around its center of mass with unprecedented accuracy. The orientation of the International Earth reference frame with respect to the geocentric International Celestial Reference Frame is obtained to within 0.1 mas, which corresponds to an equatorial arc of 3 mm. However, the striking harvest of results obtained by the astrogeodetic techniques seems to have reached a threshold. There has been no real progress since the 2010's: the nutation terms below 14 days are still not perfectly recovered, the intra-daily and subdaily fluctuations of the polar motion motion and UT1 are not followed regularly. In this respect, the observations brought by the ring laser gyroscope (RLG) could allow a better recovery of these frequency bands, as well as the sub-hourly band, which cannot be explored by the mean of astrogeodesy.

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