



Testing gravitomagnetism by means of rings of terrestrial satellites

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We propose to measure the gravitomagnetic effects due to the rotation of the Earth, by means of a space-based experiment that exploits satellites in geostationary orbits. The basic technique is the generalized Sagnac effect. The rotation of the Earth expressed by the angular momentum of the planet induces an asymmetry in the propagation of electromagnetic signals in opposite directions along a closed path around the Earth. The delays between the two counter-propagating beams for a simple configuration are calculated, and it is shown that accurate time measurements performed at one satellite could allow, in principle, to detect the gravitomagnetic effect of the Earth, without need for synchronization with the other spacecraft and ground based stations.