



The ISA accelerometer: fundamental support to the BepiColombo mission for the exploration of planet Mercury

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The ESA BepiColombo mission, for the exploration of planet Mercury, is scheduled for launch in 2013 with a two-satellite configuration. It will represent an important step in the advancement of our knowledge of the Solar System, with novel observations of the planet Mercury and of the near-Sun environment. Among the main scientific objectives of this mission are the gravimetry and rotation of Mercury and tests of Einstein's theory of general relativity, to be achieved by the MPO (Mercury Planetary Orbiter) satellite. The ISA (Italian Spring Accelerometer) instrument will give a fundamental contribution to these experiments by providing a continuous measurement of the non-gravitational accelerations acting on the MPO. These constitute a sort of "noise" — particularly strong in the case of MPO orbit — masking the signal to be extracted from the Radio Science data. Following a description of the mission, the main features of the ISA accelerometer and its rôle in the mission will be discussed. Its broad operational scenario and issues regarding the calibration will be described, together with the current activity on instrument development.