



ISA accelerometer and Moon science

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In recent years the Moon has become again a target for exploration activities, as shown by many performed, ongoing or foreseen missions. The reason for this new wave are manifold. The knowledge of formation and evolution of the Moon to current state is important in order to trace the overall history of Solar System. An effective driving factor is the possibility of building a human settlement on its surface, with all the related issues of environment characterization, safety, resources, communication and navigation. Our natural satellite is also an important laboratory for fundamental physics: Lunar Laser Ranging is continuing to provide important data that constrain possible theories of gravitation. All these topics are providing stimulus and inspirations for new experiments.

ISA (Italian Spring Accelerometer) can provide an important tool for lunar studies. Thanks to its structure (three one-dimensional sensors assembled in a composite structure) it works both in-orbit and on-ground, with the same configuration. It therefore can be used onboard a spacecraft, as a support to a radio science mission, and on the surface of the Moon, as a seismometer. The first option has been explored in the context of MAGIA (Missione Altimetrica Gravimetrica geochimica lunare), a proposal for an exploration mission with a noteworthy part dedicated to gravimetry and fundamental physics. The second option is candidate to be hosted on NASA ILN (International Lunar Network) and ESA First Lunar Lander. After a description of the instrument, both of them will be described and discussed, giving emphasis on the integration of the instrument with the other components of the respective experiments.