

SPACE EXPLORATION SYMPOSIUM (A3)
Mars Exploration – Part 2 (3B)

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VBB SEISMOMETER FOR INSIGHT MISSION

Abstract

Sodern, as the industrial partner of IPGP (Institut de Physique du Globe de Paris) and CNES (French Space Agency), is developing the sensitive part of a new seismometer dedicated to Mars mission. This seismometer is a Very Broad Band seismometer to measure the Martian seismic activity. Sodern provides an inverted mechanical pendulum, called VBB pendulum, the movement of which being detected thanks to very accurate capacitive sensors. Three similar VBB axes are incorporated in the same package; the package is a sphere under vacuum to allow the best quality factor of the pendulum.

Severe constraints of mass as far as hard environmental conditions have required a very thorough optimisation of the design. Breadboards have been manufactured and tested. They allow demonstrating the capability of the sphere to be embarked with the SEIS instrument onboard the NASA/JPL INSIGHT mission.

This paper describes the architecture of the VBB and the Sphere and gives the performances as measured on ground and expected on Mars. It will also give the development status and how the critical points have been mitigated.