

Studying fluctuations of the local gravity field with an array of atom interferometers

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Abstract

The Matter wave-laser Interferometer Gravitational Antenna (MIGA) project concerns the construction of a novel infrastructure to study strain tensor of space-time and gravitation. Using the great progresses made in last years on atom interferometry, the project aims to develop a novel approach for strain measurement and to develop a better understanding of the earth's gravity field over a broad band from frequencies of 1mHz to 10Hz. The applications of MIGA will extend from monitoring the evolution of the gravitational field to providing a new tool for detecting gravitational waves. Here we will present the basics of the instruments and the principles on which the measurement will lay. In a second time, we will explore more carefully the kind of signal that the instrument will detect and the methods to discriminate geophysical signals from gravitational waves ones.