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The Matter-wave Atomic Gradiometer Interferometric Sensor (MAGIS-100) is a 100m vertical baseline detector under construction at Fermilab. It works closely with the Atom Interferometry Observatory Network (AION), a UK-based program with the initial goal of constructing a 10m detector. Both programs will use the latest strontium atomic interferometry techniques to search for dark matter, test quantum mechanics, and investigate the feasibility of constructing future kilometre baseline detectors.

The University of Liverpool deliverable for MAGIS and AION is the phase-shear detection platform, a UHV chamber housing a tip-tilt mirror that corrects for the Coriolis effect and allows for phase shear readout. The tip-tilt mirror is rotated by amplified piezoelectric actuators, whose motion will be measured by strain gauges. The strain gauge signal is sent to a piezo controller, which completes the servomotor system and allows for the precise movement of the mirror. The testing of this system is presented, as well as the future plans to implement MAGIS.

Poster Abstract

Session Classification: Poster Session

Track Classification: Experimental - Work towards long baseline AIs