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High resolution optical accelerometers for active vibration isolation in ETEST

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The talk aims to present the design and performance of high-resolution inertial sensors/accelerometers. The sensors are built around a novel interferometric readout technique, allowing to reach sub-pm resolution. These sensors have been employed in the E-TEST project, which have been demonstrating, amongst others, a novel active-passive strategy for isolating the test-mass of the ET. They have been used both as witness sensors for monitoring the residual motion of the payload with high accuracy, and as in-loop sensors in the active vibration compensation system. The sensors have been designed to be compatible with the high-vacuum environment found in most advanced gravitational wave detectors. The witness sensor is also designed for use at cryogenic temperature of 20K, which has been reached in ETEST.

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