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High Precision Tiltmeter Data Acquisition and Control System

CAROLINE KIM, Caltech, LIGO — The tiltmeter is a high sensitivity ground rotation sensor, built with a 1kg arm balanced on a knife edge. There are various noise present in tiltmeter measurements, and intrinsic noise such as 1/f noise at sub-Hz frequencies has been a big challenge. To aid the tiltmeter development, the tiltmeter position is controlled and read out electronically by its own data acquisition and control system which comprise analog preamplifiers and drivers, data converter electronics, and computer-based controls. The data acquisition system can operate stably over the sensitivity of six orders of magnitude and at the highest frequency range, our sensitivity is 1e-9rad/sqrt(Hz).

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