



GECO: a prototype broadband triaxial seismic sensor with on-board digital electronics

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The prototype of a broadband triaxial seismic sensor (GECO) developed at the Department of Astronomy and Space Science of the University of Florence (Italy) is presented. The three sensor axes, based on an inverted pendulum, are placed in a corner cube configuration. A “C” shaped leaf spring is used in order to compensate gravity and the output signal of a capacitive position sensor is force balanced by a feedback system. The sensor integrates on-board digital electronics with 24 bits resolution, flash memory for data storage capability, and a GPS interface.

The sensor has been tested against a commercial broadband sensor: amplitude and spectral analyses of seismic ambient noise and local, regional and teleseismic earthquakes have been performed in order to compare the response of the prototype with the used reference. The prototype was found to be compatible with the reference seismometer both in amplitude and frequency showing its capability to resolve low-frequency and low-amplitude signals.