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A new Approach to Miniaturized Seismic Broadband Sensors

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There exists a demand for seismic sensors, which combine the size and the ruggedness of geophones with the performance characteristics of broadband sensors. While it may proof elusive to reach this ultimate goal, we present a new design of a broadband feedback sensor which leads into this direction. As in most modern feedback sensors, the initial movement of the mass is still picked up by a capacitive transducer. A new spring design and significant changes in the feedback loop including the magnet-coil arrangement allow for a rather small sensor, which has performance elements of a typical mediumband instrument, i.e. high dynamic range with a reasonably low intrinsic noise level over the whole passband. In addition the new sensor has the ability to operate in any orientation. We will present results of first measurements with this miniaturized broadband sensor.