



Potential Applications of an Integrated Seismic, Tilt, and Temperature Instrument

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Force feedback seismometers provide mass position outputs which represent the time-averaged feedback force applied to each inertial mass, in order to cancel external forces and keep it balanced at its center point. These external forces are primarily due to tilt and temperature. In a symmetric triaxial seismometer, tilt and temperature effects can be distinguished because temperature affects all 3 axes equally whereas tilt causes a different force on each axis. This study analyzes the resolution of tilt and temperature signals that can be obtained from a force-feedback seismometer, and the potential applicability of this data to applications such as volcano monitoring and cap rock integrity monitoring. Also the synergy of a combined seismic, tilt, and temperature instrument is considered.