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## S012-0007 - Towards Multi-Component Observations of Seismic Rotation, Strain and Translation

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 13:00 - 05:59

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### Abstract

Fiber-optic gyroscopes (FOGs) and distributed acoustic sensing (DAS) cables, make it possible to directly observe rotation and strain of the seismic wave field in temporary field experiments. On one side, these technologies open a variety of new applications like microzonation, wave field separation and source localization with a single 6DoF seismic station. On the other side, they facilitate seismic experiments in harsh and complicated environments like glaciers, volcanoes, the ocean bottom or other planets.

As an attempt in exploring the potentials of joint rotation, strain and translation measurements, researchers from the Ludwig-Maximilians University of Munich (LMU), the Federal Institute for Geosciences and Natural Resources, the University of Potsdam and the ETH Zürich organized an active source experiment in November 2019 at the Geophysical Observatory of the LMU in Fürstfeldbruck, Germany, which involved a variety of rotation, strain and translation sensors.

In this contribution, we present results from one part of the experiment where translation and rotation sensors were co-located with a 2-dimensional DAS-cable grid. We compare direct rotation and strain measurements from FOGs and DAS-cables to indirect observations derived from a small aperture array of classical broadband seismometers.

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### [From Strain to Rotation: Connecting Waveform Gradients](#)

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### [Mixed-Component Ambient Noise Cross-Correlations using Distributed Acoustic Sensing Arrays and Single Point Inertial Seismic Sensors](#)

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### [Simulating seismic wave propagation to understand Distributed Acoustic Sensing](#)

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## Distributed acoustic sensing for wireline borehole acquisition: noise sources and suppression methods

**Evgeniia Martuganova<sup>1</sup>**, Manfred Stiller<sup>1</sup>, Klaus Bauer<sup>1</sup>, Jan Henniges<sup>1</sup> and Charlotte M Krawczyk<sup>1,2</sup>, (1)Helmholtz Centre Potsdam GFZ German Research Centre for Geosciences, Potsdam, Germany, (2)Technical University Berlin, Berlin, Germany

## Performance Testing of Rotation Sensors in Seismology With an Active Source Experiment

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