

# Characterization of earthquake ground motion and ambient-noise correlation using a rotational seismometer and an array-based rotational motion

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Six-component measurements of seismic ground motion provide a unique opportunity to identify and decompose seismic wavefields into different wave types and incoming azimuths, as well as estimate structural information (e.g., phase velocity). Because of the nature of the ambient noise, we can also apply wavefield separation to the ambient-noise correlation, which is important for extracting more reliable waves by the correlation techniques. In this presentation, I re-visit the 6C wave theory for correlation techniques to understand what information should be included in the matrix of multi-component correlation functions. Note that with 6C data, we have a 6-by-6 matrix after ambient-noise correlation. Then we use the field datasets observed at Fairview, Oklahoma. There were two rotational seismometers and a 3C geophone array with 49 sensors deployed in 2017. This is a great field to compare the rotational sensors vs. array-based rotational sensors. During the two-month of deployment, we observed more than 10 local earthquakes which are around M3 and likely induced seismicity. Also, I can extract coherent wavefields from ambient-noise correlations. Here, I characterize the earthquake ground motion and ambient-noise correlation wavefields from both arrays as a field example.