



Fracture characterization from walkaround VSP in the presence of 6C sensors

Taufiq Taufiqurrahman (1), Shihao Yuan (1), Lion Krischer (2), Alice-Agnes Gabriel (1), and Heiner Igel (1)

(1) Ludwig-Maximilians-Universität München, Geophysics, Department of Earth and Environmental Sciences, München, Germany, (2) ETH Zürich, Geophysics, Department of Earth Sciences, Zürich, Switzerland

Additional observations of rotational motions (i.e. six-components or 6C) records allow us to separate wave types (P- and S-waves), estimate propagation direction and phase velocities. One of the most important issues is the question about seismic anisotropy diagnostic of fracture characterization in reservoirs. The impact of anisotropy on rotational motions is entirely unexplored. The possible use of joint measurements of translational and rotational motions in borehole seismic is investigated by performing walkaround VSP simulations. The seismograms are synthesized using the spectral element method SALVUS software package (salvus.io). We simulate 6C synthetic VSP gathers for varying azimuths and investigate what anisotropic characteristics can be determined from co-processing of rotations and translations. The results indicate that it might be time to develop 6C borehole sensors of appropriate sensitivity for exploration applications.