

SnT 2019

CTBT: SCIENCE AND TECHNOLOGY CONFERENCE



Book of Abstracts

24 TO 28 JUNE

HOFBURG PALACE
VIENNA, AUSTRIA

CTBTO.ORG/SNT2019
#SNT2019

[https://events.ctbto.org/sites/default/files/2019-06/SnT2019 Book Of Abstracts Web Version with front cover.pdf](https://events.ctbto.org/sites/default/files/2019-06/SnT2019%20Book%20Of%20Abstracts%20Web%20Version%20with%20front%20cover.pdf)

T1.2-P37 Flow Plane Orientation in the Upper Mantle under the United States from SKS Shear-Wave Splitting Observations

E. Löberich
University of Vienna, Austria

Contact: eric.loeberich@univie.ac.at

The cause of seismic anisotropy is still an open question, e.g., to which degree it is due to more recent geodynamic activities in the asthenosphere, or to frozen-in deformation in the lithosphere. We show that these two endmember cases can in principle be distinguished using shear-wave splitting observations from SKS waves. This is illustrated by the simple example of pure olivine with horizontal a-axis, and differing orientations of the other two axes, namely vertical b and vertical c. The azimuthal dependence of shear-wave splitting measurements is described by two parameters, which can provide additional information about subsurface deformation. In particular the oscillation parameter d_l constrains the orientation of foliation. We demonstrate that shear-wave splitting in Western and Central United States indeed shows the predicted azimuthal dependence, related to a mainly subhorizontally-oriented flow plane of deformation in the upper mantle. This has important implications for asthenospheric flow.