Kinematic source parameter inversion based on a Greens function database
(Buendelbeitrag KINHERD)

S. Heimann, S. Cesca, T. Dahm, F. Krüger, K. Stammler, R. Kind

Currently, extended earthquake source parameters like rupture velocity, rupture direction, source time function and geometry of the rupturing surface are not determined routinely for medium to large global earthquakes. Therefore we are developing an automated method to invert for extended earthquake source parameters. To resolve the ambiguities in the obtained earthquake models, which arise from over-parameterization, we describe the extended source model by a minimal set of parameters.

As a basic tool for the fast and routine application of the inversion code, we have assembled a Greens function database. This allows fast access to Greens functions and calculation of synthetic seismograms. Additionally, a web interface allowing the calculation of synthetic seismograms for extended sources will be provided.

To evaluate and compare different sets of source parameters and inversion strategies, we are developing a flexible and powerful new inversion tool. Our code is able to deal with arbitrarily parameterized earthquake models.

We present an application of the inversion code to a synthetic dataset, as well as a preliminary application to the retrieval of point source parameters using real data at regional distances.