



Six degrees of freedom analysis of point ground motions: application to G-ring and ROMY data

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With the recent installation of the high-sensitivity multicomponent ring laser ROMY at the Munich Geophysical Observatory for the first time 6-component (3C translations and 3C rotations) are available covering observations from ocean-generated noise, local, regional, and global earthquakes. In addition, the Wettzell G-ring laser (vertical component of rotation only), operational since 2002 some 200km away, provides the opportunity to compare observations and understand the impact of local geological setting on the joint observables. Here we discuss analysis of 6-C seismograms demonstrating the array-like processing style yet from single point measurements. This includes the estimation of phase velocity, backazimuth, phase separation, dispersion curves, local 1D velocity structure and others. We investigate the effect of local site conditions (bedrock at Wettzell and sedimentary rocks in Munich) on teleseismic wavefields. We also discuss the impact of 6C processing schemes on seismic exploration, earthquake physics, and planetary seismology.