



## **Concentration Problem of Tensor Fields on the Sphere for the Analysis of SGG Data**

Katrin Seibert

Geomathematics Group, University of Siegen, Germany (seibert@mathematik.uni-siegen.de)

Satellite gravity gradiometry data (SGG data) like the data recorded by the satellite mission GOCE is given in the form of tensors. So, an extension of the method of Slepian functions to tensors is useful. Spherical Slepian functions form a complete orthonormal basis on the unit sphere. They are a basis transformation of the spherical harmonics. Indeed, they have the advantage of the optimal concentration within a region of interest and are, thus, relevant for local problems. However, tensor Slepian functions on the sphere have only rarely been investigated so far. We construct a method for an efficient calculation of such local trial functions. They base not only on the tensor spherical harmonics (by Freedon and Schreiner) but also on the spin-weighted spherical harmonics (by Newman and Penrose).