

1096-65-1114 **Helga Nutz*** (nutz@mathematik.uni-kl.de), University of Kaiserslautern, 67663 Kaiserslautern, Germany. *A multiscale spline approach for the tensorial satellite gravity gradiometry problem.*

The launch of the satellite GOCE by the European Space Agency (ESA) in 2009 was the initial point for realizing the concept of Satellite Gravity Gradiometry (SGG). The satellite carries a set of accelerometers which measure the components of the gravity field along all three axes and ensure a coverage of the entire Earth with gravity measurements, however, at orbital altitude. Since the accelerometers measure the relative accelerations between two test masses they provide information about the Hesse tensor of the gravitational potential. In the context of inverse problems, the calculation of the gravitational potential at the Earth's surface from its second order derivatives at satellite's height turns out to be exponentially ill-posed and, thus, requires specific tensorial procedures for its solution. The talk presents a spline-based regularization method for tensorial data to overcome the calamities of the ill-posedness, thereby providing a "zooming-in" technique of modeling the gravitational potential from global to local scale.

Satellite Gravity Gradiometry as Tensorial Inverse Problem, W. Freeden, H. Nutz, *Int. J. Geomath.*(2), 177-218, 2011;

A Multiscale Spline Approach to Tensorial Satellite Gravity Gradiometry, W. Freeden, H. Nutz (submitted). (Received September 13, 2013)