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Willi Freeden and **Helga Nutz*** (nutz@cbm-ac.de), CBM - Gesellschaft für Consulting, Business und Management mbH, 66450 Bexbach, Germany, and **Rainer Rummel** and **Michael Schreiner**. *Multiscale regularization strategies for the tensorial satellite gravitational gradiometry (SGG) problem.*

Due to the measuring procedure, SGG provides information about the second order partial derivatives of the gravitational potential in the orbit of a satellite (Hesse tensor). 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, it requires specific tensorial regularization procedures for its solution. The relation between the known tensorial measurements and the gravitational potential on the Earth's surface is known to be expressible by a tensorial linear integral equation of the first kind. This operator equation may be discussed in the framework of pseudodifferential operators as an invertible mapping between certain Sobolev spaces. In the talk a wavelet based regularization technique for the decorrelation of the scalar gravitational potential at the Earth's surface from tensorial SGG data is presented. The talk is based on the article "Satellite gravitational gradiometry: Methodological foundation and geomathematical advances" from W. Freeden, H. Nutz, R. Rummel, and M. Schreiner (In: W. Freeden, R. Rummel (Eds.): Handbuch der Geodäsie, Vol. 6, Springer Spektrum, Berlin, Heidelberg, 2019). (Received September 16, 2019)