Spectral combination of spherical gravitational curvature boundary-value problems

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The spherical gravitational curvature boundary-value problems are defined for four combinations of gravitational curvatures, i.e. components of the third-order gravitational tensor. In this contribution we discuss the determination of the Earth’s disturbing gravitational potential from boundary condition in form of satellite gravitational curvature tensor (third-order gravitational tensor), particularly addressing the problem of merging these solutions based on applying the spectral combination. For this purpose, integral estimators of biased- and unbiased-types are derived and applied to recover the disturbing gravitational potential from the gravitational curvatures based on solving the spectral combination of spherical gravitational curvature boundary-value problems. In numerical studies we investigate a performance of developed models in context of regional gravitational field modelling.