



## **A Comparison of direct and indirect regularization methods for downward continuation problem of geoid computations without applying Stokes formula**

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The problem of downward continuation of the gravity field from the Earth's surface to the reference ellipsoid arises from the fact that the solution to the boundary value problem for geoid determination without applying Stokes formula is sought in terms of the disturbing potential on the ellipsoid but the gravity observations are only available on the Earth's surface. Downward continuation is achieved via Abel-Poisson integral and its derivatives. Ergo the downward continuation of the disturbing gravity observables has been classified as an inverse problem. Regularization methods have to be applied. The comparison of direct and indirect regularization methods is the topic of this paper. Based on the results of a simulation study, ART method gives the best results for the problem. Next ART method was applied for real gravity modulus for geoid computations in geographical region of Iran.