Improvement of the Euler deconvolution algorithm by means of the introduction of regularized derivatives

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A b s t r a c t : The Euler deconvolution method is one of the most used semi-automated methods in potential fields interpretation during last decade. The evaluation of gradients, which enter into the algorithm of the method should be stabilized, because this numerical calculation strongly emphasizes errors and noise in the original data and makes the results of the method instable and defocused. Evaluation of stable derivatives by means of the regularization method demonstrates on a synthetic model study and practical data application the stabilization and focusing of the depth estimates, obtained by means of the Euler deconvolution method. Solutions, obtained for regularized gradients are deeper in comparison with the erroneous shallow ones (obtained without the regularization).

Key words: geophysics, gravimetry, magnetometry, semi-automated interpretation methods, Tikhonov regularization

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