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## Linear Inverse and Ill-Posed Problem and Regularization Methods for their Stable Solution

(3 Lectures)

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We start by illustrating the instability (ill-posedness) connected with inverse problems and some basic principles for constructing regularization methods for their stable solution on the simple example of differentiation. We then treat a prototype of linear ill-posed, namely linear integral equations of the first kind, and show how regularization methods can be constructed based on the spectral theory of compact linear operators.