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On the regularization parameter choice in regularization methods for solving Fredholm integral equations of the first kind

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Abstract

To find the approximate solution to first kind kind linear Fredholm integral equations, it is necessary to use some regularization method, for example, Tikhonov or Landweber method. The main problem in applying these methods is the selection of a suitable regularization parameter. It is known [1] that at least one local minima point of the quasi-optimal criterion function guarantees a small error of the approximate solution. We consider different algorithms to choose proper local minima point as a regularization parameter.

References

[1] T. Raus and U.Hämarik. *Heuristic parameter choice in Tikhonov method from minimizers of the quasi-optimality function.* In: Hofmann, Bernd, Leitao, Antonio, Zubelli, Jorge P. (Ed.). New Trends in Parameter Identification for Mathematical Models (118). Birkhuser De Gruyter, 2018, 227-244.

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