1067-45-1775   **Cara D. Brooks*** (`brooksca@math.msu.edu`) and **Patricia K. Lamm**. *Generalized local regularization of linear inverse problems, with application to Volterra problems in L^p-spaces.* Preliminary report.

A regularization method is formulated which generalizes local regularization for solving linear inverse ill-posed problems. The generalized method, which includes Tikhonov regularization and Lavrentiev regularization as special cases, provides a framework for the design of non-global regularization methods and methods which make use only of the data most relevant to the desired solution.

As an example, a version of local regularization is shown to naturally satisfy the conditions set forth in the generalized method when applied to a class of linear Volterra convolution equations. Convergence of the method is shown for the underlying data spaces $L^p(0,1)$, $1 < p < \infty$. Under assumptions of increased regularity of the true solution, rates of convergence are established for data in $L^p(0,1)$, $1 \leq p \leq \infty$. (Received September 23, 2010)

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