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Michael Victor Klibanov* (mklibanv@uncg.edu), Department of Mathematics and Statistics, University of North Carolina at Charlotte, Charlotte, NC 28223. *Globally convergent numerical methods for coefficient inverse problems with experimental data.*

Conventional numerical methods for Coefficient Inverse Problems (CIPs) do not have a rigorously guaranteed convergence, unless their starting points are located in a small neighborhood of the solution. In other words, those are locally convergent methods.

Thus, the most important question to address when solving a CIP is: How to rigorously obtain at least one point in a small neighborhood of the solution, provided that no a priori information is available about this neighborhood?

The author calls any numerical method addressing this question "globally convergent numerical method".

The topic of global convergence has been studied by the author in 1995-1997 with renewed interest in 2008-2015. His ideas have strong roots in the Bukhgeim-Klibanov method (1981) of Carleman estimates, which enables to prove global uniqueness and stability results for a wide class of CIPs.

Two types of globally convergent numerical methods for CIPs will be presented. For the first type, successful results of working with experimental data will be presented as well. This is because numerical studies for this type are most advanced at this moment.

For the second type, successful results of numerical experiments with computationally simulated data will be presented. (Received October 17, 2014)