1133-65-324 **Cara D. Brooks***, 10501 FGCU Blvd. South, Fort Myers, FL 33967. *An improved first-order local regularization method for ill-posed Volterra equations.* Preliminary report.

Solutions of linear and nonlinear inverse problems, particularly those with special structure or for which non-smooth solutions are expected, can be effectively reconstructed using *local regularization* methods. These methods allow for the utilization of data most relevant to the desired solution and regularization to be applied in a non-global manner. For Volterra equations, these methods retain the causal structure of the original equation (in contrast to classical regularization methods) and lead to fast sequential numerical algorithms to solve the inverse problem.

In this talk, we present an improved first-order local regularization method for solving ν-smoothing Volterra equations that is shown to be both stable and convergent for *all* values of $\nu = 1, 2, \ldots$. A numerical implementation of the method and scheme for determining the initial condition are described. Examples are provided to illustrate newfound stability in the cases $\nu = 4$ and higher. (Received July 31, 2017)