1023-45-1685 **Xiaoyue Luo*** (luoxiaoy@msu.edu), 1520 Apt.D, Spartan Village, East Lansing, MI 48823, and **P. K. Lamm**. *Local Regularization Methods for Nonlinear Volterra Integral Equations of Hammerstein Type.*

We developed a local regularization theory for the nonlinear Volterra problem of Hammerstein type. Our method retains the causal structure of the original Volterra problem and allows for fast sequential numerical solution. The fundamental difference between our method and the previous existing local regularization method for Hammerstein equations (Lamm and Dai, 2005) is that for our method we don't need to solve a nonlinear equation at every step of a numerical implementation. We only have to solve a nonlinear equation for the first step. We prove the convergence of the regularized solutions to the true solution as noise level in the data shrinks to zero with a certain convergence rate.

(Received September 26, 2006)