1133-46-317 **Alexandra Smirnova*** (asmirnova@gsu.edu), Department of Mathematics and Statistics, Georgia State University, 30 Pryor Street, Atlanta, GA 30303. *On New Developments in Iterative Regularization Motivated by Parameter Identification Problems in Epidemiology.*

A considerable number of parameter identification ill-posed problems come from epidemiology and infectious disease modeling. Classical compartmental epidemic models of infectious diseases track the dynamic transition of individuals between different epidemiological states or risk groups. However, with limited epidemiological data available in the case of an emerging disease, simple phenomenological models based on a smaller number of parameters can play an important role in our quest to make forward projections of possible outbreak scenarios. In this talk, we employ the generalized Richards model for stable numerical estimation of the epidemic size and its turning point using early incidence data. The minimization is carried out by what we call the Reduced Iteratively Regularized Gauss-Newton (RIRGN) algorithm, a problem-oriented numerical scheme that takes full advantage of the specific structure of the nonlinear operator at hand. The convergence analysis of the RIRGN method is suggested and numerical simulations are conducted with real case incidence data for the 2014-15 Ebola epidemic in West Africa. We show that the proposed RIRGN provides a stable algorithm for early parameter estimation and forecasting using simple phenomenological models with limited data. (Received July 31, 2017)