

1146-49-530

Hans-Werner van Wyk* (hzw0008@auburn.edu). *Spatially Adaptive Regularization for Inverse Problems in Elliptic Partial Differential Equations*. Preliminary report.

The least squares identification of the diffusion coefficient in elliptic partial differential equations from measurements of the model output suffers from ill-conditioning. A stable reconstruction therefore usually relies on regularization techniques that exploit prior knowledge of the coefficient. In this work we investigate the use of spatially dependent regularization parameters to (i) adequately resolve detailed regions where possible, while (ii) smoothing homogeneous

regions. We employ local variance estimates within an augmented Lagrangian framework to estimate the appropriate local regularization parameter. (Received January 29, 2019)