1014-47-1276   **P. P. B. Eggermont*** (`eggermon@udel.edu`), Food and Resource Economics, University of Delaware, Newark, DE 19716, and **V. N. LaRiccia** and **M. Z. Nashed**. *Tikhonov regularization of ill-posed operator equations with weakly bounded noise.* Preliminary report.

We study Tikhonov regularization of ill-posed operator equations with noisy data. However, rather than assuming the usual strong bounds on the error in the data, we consider the case where asymptotically, the error converges weakly to 0. On the appropriate compact subset, we may then assume rates of weak convergence. In Sobolev spaces parlance, this is equivalent to assuming error bounds in "negative" Sobolev norms. Under the usual source conditions, we derive optimal convergence rates on the approximate solution. We also consider an analogue of the Morozov discrepancy principle for choosing the regularization parameter. As an example, we consider ill-posed integral equations with discrete data corrupted by zero mean, uncorrelated noise. (Received September 27, 2005)

1