

Meeting: 1003, Atlanta, Georgia, SS 17A, AMS-SIAM Special Session on Nonsmooth Analysis in Variational and Imaging Problems, I

1003-45-1314 **P. P.B. Eggermont*** (eggermon@udel.edu), Food and Resource Economics, University of Delaware, Newark, DE 19717. *Reproducing kernel Banach spaces and total-variation regularization of compact operator equations.*

A reproducing kernel Banach space is just like a reproducing kernel Hilbert space, except that the reproducing kernel is an element of the dual space. The example that interests us is the space $BV(0, 1)$, the relevant norms being $\|f\|_{BV,h} = \|f\|_{L^2} + h|f|_{TV}$, for $h > 0$. (These norms are equivalent, but not uniformly in h .) The rkbs set-up is used to show convergence rates for the total-variation-regularization of compact operator equations in $BV(0, 1)$, with noisy data (zero mean, uncorrelated with finite (fixed) variance), even though the regularized solution need not be unique. The rkbs theory provides a simple alternative to the metric entropy approach. This represents joint work with Vince LaRiccia. (Received October 04, 2004)