1046-00-768 **Christiane Poeschl***, Infmath Imaging (Department of Mathematics). *Tikhonov Regularization Methods with General Data-Fit Term.* Preliminary report.

We study variational methods for the solution of inverse and ill–posed problems, which can be written in form of an operator equation

$$F(u) = v \ , \qquad u \in U, v \in V. \tag{I}$$

Originally, Tikhonov proposed a quite general setting: Only assuming that S is a functional (measuring the error between $F(u)$ and v^δ - data fit term), that $\alpha > 0$, and that R is a non-negative functional, he suggested to use a minimizer of the functional

$$S(F(u), v^\delta) + \alpha R(u) \tag{M}$$

to approximate a solution of (I). We give necessary under which we can prove well-defindness, stability, convergence and convergence rates for (M). The motivation to use more general similarity measures is to perform regularization from an information perspective, in the sense that one constrains the closeness of the data v to ist observed perturbation v^δ to satisfy an information measure rather than some distance measure associated with some function space. We discuss Bregman distances, f-divergences and the Wasserstein metric as appropriate choices for the data-fit term Sl in the general Tikhonov method. (Received September 11, 2008)