1035-Z1-300   **Fred Samuel Greensite*** (`fredg@uci.edu`), UCI Medical Center, Radiological Sciences, Route 140, 101 The City Drive South, Orange, CA 92868. *A Minimax Entropy Principle Arising in the Treatment of Certain Multivariate Ill-Posed Problems.*

Convergent methodology for general ill-posed problems is typically equivalent to application of an operator dependent on a single parameter derived from the noise level and the data (a regularization parameter or terminal iteration number). In the context of a given problem (discretized for numerical analysis), these methods can be viewed as resulting from imposed prior constraints bearing the same amount of information content. We identify a new regularization method for treatment of certain discretized ill-posed problems (such as represented by Sylvester or Lyapunov equations structured by ill-conditioned matrices), which imposes constraints of much lower information content (i.e., having much lower bias), based on the operator's dependence on many data-derived parameters. The associated marked performance improvements possible are illustrated with with numerical examples. The methodology can be understood in terms of a Minimax Entropy Principle, which emerges from the Maximum Entropy Principle when the forward operator resides in a tensor product of operator spaces. (Received August 31, 2007)