1056-90-597 Sundeep Samson* (sundees@clemson.edu), Department of Mathematical Sciences, Clemson University, Clemson, SC 29634, and James A Reneke (reneke@clemson.edu), Department of Mathematical Sciences, Clemson University, Clemson, SC 29634. Balancing a dissipative linear SDE with uncertain parameters.

Consider a design problem for a system modeled by a dissipative linear stochastic differential equation with uncertain parameters. Uncertainty is approached in F. M. Knight's sense, i.e., uncertain means knowable but unknown. Hence uncertainties are handled without assuming a distribution. The design objective is minimizing over all uncertainty values a functional, system imbalance depending on system design parameters, defined on the sample paths of the system response. The design problem is formulated as a stochastic multi-criteria optimization problem over a function space. A design preference is given in terms of value at risk dependent on uncertainty values. Resolution of the stochastic multi-criteria optimization problem produces a preferred design that balances the system. (Received September 14, 2009)