1014-60-267          **Edward J. Allen\*** (`edward.allen@ttu.edu`), Department of Mathematics and Statistics, Texas Tech University, Lubbock, TX. *Stochastic Differential Equation Models for Flow Through Porous Media and for Multigroup Reactor Kinetics.* Preliminary report.

In flow through acquifers, permeability and porosity of the medium exhibit a random behavior and can be treated as spatial stochastic processes. The flow equations for a random porous medium are traditionally modeled using stochastic partial differential equations. In the present investigation, it is shown how one-dimensional flow in a random porous medium can be formulated as a system of Ito stochastic differential equations which provide insight into the flow phenomenon. In a second research project, the stochastic point kinetics equations in nuclear reactor dynamics are generalized to include neutron energy dependence. The resulting system of stochastic differential equations are referred to as stochastic multigroup point kinetics equations. (Received September 02, 2005)