1136-60-377 **Tyrone E. Duncan***, duncan@ku.edu. *Some Stochastic Control Problems for Evolution Equations with State Dependent Gauss-Volterra Processes.*

A stochastic control problem for an evolution equation in an infinite dimensional Hilbert space and a stochastic term that is bilinear in the state and a noise process that is a scalar Gauss-Volterra process is formulated and solved. The Gauss-Volterra noise processes are obtained from the integral of a Brownian motion with a suitable kernel function. These noise processes include fractional Brownian motions with the Hurst parameter $H \in (\frac{1}{2}, 1)$, Liouville fractional Brownian motions with $H \in (\frac{1}{2}, 1)$, and some multifractional Brownian motions. The cost functional is quadratic in the state and the control and the time horizon can be finite or infinite. The family of admissible controls is a family of linear feedback controls. This restriction on the family of controls allows for a feasible implementation of the optimal controls. The optimal feedback controls are determined by the solution of a Riccati equation which differs from the well known Riccati equation for a linear-quadratic control problem. These equations can model stochastic partial differential equations of parabolic and hyperbolic types and some examples are given.

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