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**Tyrone E. Duncan\*** ([duncan@math.ku.edu](mailto:duncan@math.ku.edu)), Mathematics Dept, Snow Hall, University of Kansas, Lawrence, KS 66045. *Stochastic Equations with a Fractional Brownian Motion*. Preliminary report.

Some stochastic partial differential equations with a fractional Gaussian are described by stochastic differential equations in a Hilbert space with a cylindrical fractional Brownian motion. These stochastic equations include linear and semilinear equations. This approach is applied to partial differential equations that are described abstractly by both Co and analytic semigroups. The solutions of the linear equations are given as mild solutions for all values of the Hurst parameter on  $(0, 1)$  which indexes the family of fractional Brownian motions. Furthermore, sample path properties are verified for these solutions. Weak solutions of semilinear equations are obtained from the corresponding linear equations by an absolutely continuous transformation of the measure for a fractional Brownian motion. Some examples are given that can be treated by this approach. (Received August 24, 2005)