1020-93-210 **Tyrone E. Duncan*** (`duncan@math.ku.edu`), Mathematics Department, Snow Hall, University of Kansas, Lawrence, KS. *Radon-Nikodym Derivatives for Stochastic Systems with Fractional Brownian Motions.* Preliminary report.

A stochastic system is described by a stochastic differential equation where the usual Brownian motion is replaced by a fractional Brownian motion. The fractional Brownian motions that are especially considered are those whose Hurst parameter is in the interval (1/2, 1) because this subfamily seems to occur empirically in physical phenomena. The Radon-Nikodym derivatives with respect to the measure for a fractional Brownian motion are given explicitly and they provide weak solutions for stochastic differential equations. These Radon-Nikodym derivatives are useful in stochastic control, filtering, and estimation and some indication of these applications is given. (Received August 29, 2006)