1044-60-35 **Fariborz Asadian*** (asadianf@fvsu.edu), Department of Mathematics and Computer Sci., Fort Valley State University, 1005 State University Drive, Fort Valley, GA 31030. *Smoothness Properties of Measures Induced by Stochastic Differential Equations in Hilbert Space.*

One of the problems of interest in stochastic analysis is finding regularity properties of distributions that are generated by solutions of stochastic differential equations in Euclidean space. We consider this problem in the context of an infinite dimensional Hilbert space. In such a space the collection of all vectors in the directions of which a given $\sigma$-additive measure is differentiable forms a proper subspace known as the subspace of differentiability of the measure. The focus of this investigation will be on finding the subspaces of differentiability of measures that are generated by the solution of an infinite dimensional stochastic differential equation of the type $d\xi(t) = [A\xi(t) + \sigma(\xi(t))]dt + G(\xi(t))dW(t)$, where $W(t), t \geq 0$ is a Wiener process with sample paths in a separable Hilbert space $H$. Here $A$ is the infinitesimal generator of a strongly continuous semigroup of operators on $H$, and the coefficients $\sigma$ and $G$ satisfy regularity conditions in addition to those sufficient for existence and uniqueness. We will consider specific examples and discuss applications to forward and backward parabolic equations in Hilbert space. (Received July 18, 2008)