1046-93-285 **N. U Ahmed*** (`ahmed@site.uottawa.ca`), SITE, 161 Louis Pasteur, University of Ottawa, Ottawa, Ontario K1N6N5, Canada. *Kalman Filtering of Measure Driven Processes in Hilbert Space.*

Let $\{X, Y, U, V\}$ be separable Hilbert spaces on which are defined the following system of stochastic evolution equations,

$$dx = Axdt + B(t)x(t-)\nu(dt) + \sigma(t)dW(t), x(0) = x_0, t \geq 0, \tag{1}$$

$$dy = H(t)x(t-)\beta(dt) + \sigma_0(t)M(dt), y(0) = 0, t \geq 0, \tag{2}$$

where A generates a C_0 semigroup on X and $\{B, \sigma, H, \sigma_0\}$ are operator valued functions and $\{\nu, \beta\}$ are countably additive signed measures. The processes $\{W, M\}$ are U and V valued Brownian motion and Martingale measures on a filtered probability space $(\Omega, \mathcal{F}, \mathcal{F}_{t\geq 0}, \mathcal{F}_t^y, P)$ with covariance operators Q and $R\tilde{\beta}(dt)$, $\tilde{\beta}$ a positive measure. Problem is: Find the best estimate of $x(t)$ given the history $\mathcal{F}_t^y$ which is given by $\hat{x}(t) = E\{x(t)|\mathcal{F}_t^y\}$. This is equivalent to the control problem: Find $\Gamma \in B_\infty(I, \mathcal{L}(Y, X))$ that minimizes the error covariance functional $J(\Gamma) = \int Tr(\lambda(t)K(t))dt$ with K satisfying the evolution equation

$$\begin{aligned} dK = {} & (AK + KA^*)dt + (BK + KB^*)\nu(dt) + \hat{Q}(t)dt \\ & - (\Gamma HK + KH^*\Gamma^*)\beta(dt) + (\Gamma\hat{R}\Gamma^*)\tilde{\beta}(dt), t \geq 0, \end{aligned} \tag{3}$$

on the Banach algebra $\mathcal{L}(X)$. (Received August 25, 2008)