1056-49-44 **Nasiruddin U Ahmed*** (`ahmed@site.uottawa.ca`), 800 King Edward Str., Ottawa, Ontario K1N6N5, Canada. *Operator Valued Measures as Feedback Control for Stochastic Systems on Hilbert Space.*

We consider a partially observed stochastic control problem with operator valued measures as controls.This is given by the following stochastic differential equation on the Hilbert space X coupled with an algebraic equation representing noisy measurement process taking values from another Hilbert space Y as follows:

$$dx = Axdt + B(dt)y(t-) + \sigma(t)dW(t), t \in I \equiv [0,T], x(0) = x_0 \tag{1}$$

$$y(t) = C(t)x(t) + \xi(t), t \in I. \tag{2}$$

The process x is the state,y is the observation and W is a Brownian motion taking values from a Hilbert space H and ξ is an arbitrary second order Y valued random processes. The operator A is the generator of a C_0-semigroup of bounded linear operators on X, $B \in M_{cabv}(\Sigma, \mathcal{L}(Y,X))$ and $\sigma \in B_\infty(I, \mathcal{L}(H,X))$. The problem is to find a control policy $B \in \Gamma \subset M_{cabv}(\Sigma, \mathcal{L}(Y,X))$ that minimzes the functional

$$J(B) \equiv \int_I Tr(P(t))\ \lambda(dt) + \int_I |\bar{x}(t) - x_d(t)|_X^2 \nu(dt) + \Phi(B), \tag{3}$$

where $P(t)$,dependent on B, is the covariance operator taking values from the space of nuclear operators $\mathcal{L}_1(X)$ and λ and ν are nonnegative measures. (Received July 09, 2009)