1023-49-135 **N.U AHMED***, 161 Louis Pasteur, Ottawa, Ontario K1N6N5, Canada. *DIFFERENTIAL INCLUSIONS DRIVEN BY VECTOR MEASURES AND THEIR OPTIMAL CONTROL.*

Let E and U be separable Banach spaces with E denoting the state space and U the control space. Consider the system

$$dx \in Axdt + B(dt)x(t) + C(t, x(t))dt + \Gamma(t)u(dt), x(0+) = x_0, x_0 \in E$$

where A is the infinitesimal generator of a C_0-Semigroup on E, $C : I \times E \longrightarrow 2^E \setminus \emptyset$ is a multi function, $\Gamma \in BM(I, \mathcal{L}(U, E))$ and B is an operator valued measure mapping $B : \Sigma \equiv \mathcal{B}(I) \longrightarrow \mathcal{L}(E)$ and $u \in \mathcal{U}_{ad} \subset \mathcal{M}_c(I, U)$ where $\mathcal{U}_{ad}$ denotes the class of admissible controls, a suitable subset of the space of U-valued countably additive bounded vector measures. The objective of the paper is to present existence theory and necessary conditions of optimality for the control problem

$$\inf_{u \in \mathcal{U}_{ad}} \sup_{x \in X(u)} \left\{ \Upsilon(u, x) \equiv \int_0^T \ell(t, x(t))dt + \Psi(x(T)) + \varphi(u) \right\}$$

where $X(u)$ denotes the family of solutions corresponding to the control $u \in \mathcal{U}_{ad}$. Ref: N.U.Ahmed, Optimal Relaxed Controls for Systems Governed by Impulsive Differential Inclusions, NFAA, 10(3) (2005),427-460. (Received August 09, 2006)