Meeting: 1003, Atlanta, Georgia, AMS CP 1, AMS Contributed Paper Session

1003-35-349 **Mircea Dan Voisei*** (`voiseim@tristate.edu`), Tri-State University, Department of Math&CS, Best Hall 201C, 1 University Avenue, Angola, IN 46703. *Mild Periodic Solutions for Evolutionary Type Equations.* Preliminary report.

Consider $(H, (\cdot,\cdot), ||\cdot||)$ a real Hilbert space, $A : D(A) \subset H \to H$ a maximal monotone operator, $T > 0$, and $f \in L^1(0,T;H)$. The "periodic solution" operator $P : D(P) \subset L^1(0,T;H) \rightrightarrows L^\infty(0,T;H)$ is defined by $(f,y) \in P$ iff $y \in C([0,T];H)$ is $T-$periodic, i.e., $y(0) = y(T)$ and y is a mild solution of $y'(t) + Ay(t) \ni f(t)$, $t \in [0,T]$.

A complete answer of whether or not for a given f and A the periodic problem admits a solution has not yet been found even in simple cases such as for a 1-dimensional space H or a linear operator A. Partial answers have been given by Haraux for A linear symmetric or a subdifferential and $f \in L^2(0,T;H)$. A definitive answer is known for A coercive or strongly monotone. Most of the time the found periodic solutions were strong. The main goal of this note is to extend these results for general A and $f \in L^1(0,T;H)$. The conditions we consider depend directly on A and f and the found periodic solutions are generally mild. (Received September 11, 2004)