Meeting: 1004, Bowling Green, Kentucky, SS 7A, Special Session on Semigroups of Operators and Applications

1004-47-171   **Lan Nguyen*** (`Lan.Nguyen@wku.edu`), Department of Mathematics, Western Kentucky
University, Bowling Green, KY 42101. *On the periodic solutions of abstract second order
differential equations.* Preliminary report.

For the differential equation $u''(t) = Au'(t) + Bu(t) + f(t)$ (*), $t \in R$, where A and B are closed operators in a Banach space E, we find the necessary and sufficient conditions such that (*) has a unique periodic solution for each periodic function f. The main technique used here is Fourier series and operator matrix theory. In particular, if A is generator of a C_0 semigroup, a result of "Gearhart's Theorem" type is obtained. (Received January 24, 2005)

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