1067-34-2262 **Aaron T Welters*** (awelters@math.uci.edu), Department of Mathematics, University of California at Irvine, Irvine, CA 92697. *Perturbation Analysis of Slow Waves for Periodic Differential-Algebraic Systems of Definite Type.* Preliminary report.

In this talk we consider linear periodic differential-algebraic equations (DAEs) with properly stated leading term which are index-1 tractable such that the DAEs depend analytically on a parameter. In particular, we extend the results of M. G. Kreĭn and G. Ja. Ljubarskiĭ [*Amer. Math. Soc. Transl. (2) Vol. 89 (1970), pp. 1–28*] to linear periodic DAEs of definite type and study the analytic properties of the Bloch-Floquet multipliers for the system as function of the perturbation parameter.

The focus of this talk will be the connection between a non-diagonalizable Jordan normal form of the monodromy matrix for the reduced differential system associated with the DAEs and the occurrence of slow Bloch-Floquet waves/solutions for the periodic DAEs.

We conclude the talk with an application of this theory to the study of slow light in photonic crystals [A. Figotin and I. Vitebskiy, *Slow Light in Photonic Crystals*, Waves Random Complex Media, 16 (2006), pp. 293–382]. (Received September 22, 2010)