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**Aaron Welters\*** ([awelters@math.uci.edu](mailto:awelters@math.uci.edu)), Department of Mathematics, University of California, Irvine, CA 92697. *On Constructibility Results for a Class of Non-Selfadjoint Analytic Perturbations of Matrices with Degenerate Eigenvalues.*

In this talk, I consider the problem of finding explicit recursive formulas to compute the perturbed eigenvalues and eigenvectors of non-selfadjoint analytic perturbations of matrices with degenerate eigenvalues. Based on some math-physics problems arising from the study of slow light in photonic crystals, we single out a class of perturbations that satisfy what I call the generic condition. It will be shown that for this class of perturbations, the problem mentioned above of finding explicit recursive formulas can be solved. Using these recursive formulas, I will list the first and second order terms for the perturbed eigenvalues and eigenvectors of perturbations belonging to this class. (Received September 20, 2009)