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**Philip V Vu\*** (pvv1@williams.edu) and **Matthew Coudron** (coudr003@umn.edu). *Spectral Analysis of Non-Hermitian Matrices.*

Motivated by work of Contedini-Embree-Trefethen and Goldsheid-Khoruzhenko, we investigate the spectral properties of certain classes of non-Hermitian matrices. We give parametrizations for curves in the plane that contain the spectrum of bi-diagonal matrices with periodic diagonal entries. In the case of period two, we find an asymptotic formula for the spacing between these eigenvalues.

We also study the pseudospectrum  $\sigma_\varepsilon(A)$  of a general square matrix  $A$ . We generalize the Bauer–Fike Theorem and give lower and upper bounds to show that the asymptotic decay (as  $\varepsilon \rightarrow 0$ ) of the diameter of  $\sigma_\varepsilon(A)$  near the eigenvalue  $\lambda$  is of order  $\varepsilon^{1/k}$ , where  $k$  is the dimension of the largest Jordan block associated to  $\lambda$ . (Received September 01, 2010)