1128-35-264 **Michael Hitrik***, Department of Mathematics, UCLA, Los Angeles, CA 90095-1555. *Spectra for non-self-adjoint operators and integrable dynamics.*

Non-self-adjoint operators appear in many settings, from kinetic theory and quantum mechanics to linearizations of equations of mathematical physics. The spectral analysis of such operators, while often notoriously difficult, reveals a wealth of new phenomena, compared with their self-adjoint counterparts. Spectra for non-self-adjoint operators display fascinating features, such as lattices of eigenvalues for operators of Kramers-Fokker-Planck type, say, and eigenvalues for operators with analytic coefficients in dimension one, concentrated to unions of curves in the complex spectral plane. In this talk, we shall discuss spectra for non-self-adjoint perturbations of self-adjoint operators in dimension two, under the assumption that the classical flow of the unperturbed part is completely integrable. We shall describe the role played by the flow-invariant Lagrangian tori of the completely integrable system, both Diophantine and rational, in the spectral analysis of the non-self-adjoint operators. The particular focus will be on the recent results on spectral contributions of rational tori, leading to eigenvalues having the form of the "legs in a spectral centipede". This talk is based on joint work with Johannes Sjöstrand. (Received February 28, 2017)