Spectral instability for non-self-adjoint operators

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In this talk I will describe some recent work of my student Mildred Hager about non-self adjoint operators in dimension 1 and their random perturbations in the semi-classical limit. When the unperturbed operator has analytic coefficients it is known in some cases and expected more generally, that the spectrum will accumulate towards a union of curves. However, after adding small random perturbations, Hager shows (under suitable assumptions) that with a probability close to 1 the eigenvalues spread out inside the instability region (pseudospectrum) and distribute according to a (possibly) new type of Weyl law. This work can be viewed as a kind of continuation of a conversation I had with Professor Kawai 33 years ago.