

Abstract Submitted
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The spectra of spiral wave breakup DWIGHT BARKLEY, University of Warwick, PAUL WHEELER, University of Warwick — It has been known for many years that spiral waves in excitable reaction-diffusion systems can break up into a state of spatio-temporal chaos. The breakup may occur near the spiral tip (core breakup) or far from the tip (far-field breakup). Past analyses of these phenomena have been almost exclusively based on the study of 1D wave trains. This talk focuses on the computation of linear stability spectra and nonlinear simulations of spiral waves on large 2D disks. Through such computations we determine point eigenvalues associated with both types of breakup and show that these are near to, but not in, the absolute spectra. Hence spiral breakup occurs before the crossing of the absolute spectrum, contrary to prediction. Both types of breakup appear to be simply due to subcritical Hopf bifurcations.

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