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Lattice patterns in the periodic Gierer-Meinhardt system

We consider the Gierer-Meinhardt equations posed on the plane. The stability of spike solutions in which the spikes centres line up on a lattice will depend on the value of the regular part of the quasi-periodic Green's function on that lattice. The Green's function may be represented as an infinite sum, but it converges very slowly. We will show how to evaluate this Green's function quickly and determine the stability of a given lattice formation.

This is ongoing work with Dr. John Rumsey and Dr. Michael Ward.