Coexistence of hexagons and rolls

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In this talk we introduce a rigorous computational method for finding heteroclinic solutions of a system of two second order differential equations. These solutions correspond to standing waves between rolls and hexagonal patterns of a two-dimensional pattern formation PDE model. After reformulating the problem as a projected boundary value problem (BVP) with boundaries in the stable/unstable manifolds, we compute the local manifolds using the Parameterization Method and solve the BVP using Chebyshev series and the radii polynomial approach. Our results settle a conjecture by Doelman et al. about the coexistence of hexagons and rolls.

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