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9. Ordinary Differential Equations and Dynamical Systems

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Spiral Waves and Euclidean Symmetry

Spiral waves have been observed in several chemical systems, for instance, in the Belousov-Zhabotinsky-reaction and in the catalysis on platinum surfaces. Seemingly key to the dynamics of spiral waves is the Euclidean symmetry group SE(2). In the talk an SE(2)-equivariant center-manifold reduction near meandering spiral waves is developed. The vectorfield on the center-manifold has skew-product structure which is important for the understanding of bifurcations from spiral waves. Using the center-manifold reduction periodic forcing of meandering spiral waves is investigated. The results explain experiments from chemistry.