
Spots in the Swift–Hohenberg Equation

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Abstract

The existence of localized radially symmetric two and three dimensional solutions to the Swift–Hohenberg equation is explored both numerically through continuation and analytically through the use of geometric blow-up techniques. The bifurcation structure for these solutions is elucidated by formally treating the dimension as a continuous parameter in the equations. This reveals a family of solutions with an anomalous amplitude scaling that is far larger than expected from a formal scaling in the far field. The existence of these solutions is then established at onset using geometric blow-up techniques. This approach has the advantage that an *a priori* knowledge of this scaling is unnecessary as it naturally emerges from the construction.

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