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Jan Bouwe van den Berg* (janbouwe@few.vu.nl), Department of Mathematics, de Boelelaan 1081, 1081HV Amsterdam, Netherlands, and **Jean-Philippe Lessard**. *Chaotic braided solutions via forcing and rigorous numerics.*

The Swift-Hohenberg equation is a fourth order parabolic PDE that models aspects of pattern formation, such as the finite wavelength instability in Rayleigh-Benard convection. We focus on stationary solutions of the equation in one dimension, and interpret solutions of this ODE as braided strands. Using a variational principle this leads to topological forcing results. On the other hand, recent advances in rigorous numerics allow us to prove the existence of a periodic solution with the right geometric properties. Via the forcing results, this periodic solution implies chaotic dynamics for the Swift-Hohenberg ODE for a large range of parameter values. (Received January 18, 2010)