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**John M Neuberger\*** (John.Neuberger@NAU.Edu), Department of Math. and Stat, NAU, Box 5717, Flagstaff, AZ 86011, and **Nandor Sieben** and **James W Swift**. *Semilinear PDE on Regions with Fractal Boundary and Semilinear Pde on Graphs; Automated Branch Following and Symmetry*. Preliminary report.

We discuss the existence, symmetry, and numerical simulation of solutions to a semilinear elliptic partial differential equation on a region with fractal boundary. In particular, we use symmetry analysis and automated branch following to obtain approximations of solutions of every possible symmetry in a region with  $D_6$  symmetry and a fractal boundary. Time permitting, we will discuss the generalization of the functional and symmetry analysis and corresponding algorithms to partial difference equations on graphs. (Received March 07, 2006)