![Northern Arizona University logo]

**Department of Mathematics and Statistics**

**COLLOQUIUM**
**Tuesday, January 20th, 2015**
4:00 – 5:00 pm, Adel Mathematics Bldg., Room 164
(refreshments at 3:45)

# Dr. James W. Swift
NAU

# Invariant Subspaces for a Nonlinear PDE on the Sierpinski Gasket.

Abstract: The Gradient Newton Galerkin Algorithm (GNGA) of Neuberger, Sieben and Swift uses the invariant subspaces of a nonlinear operator to follow the branching of solutions to a one-parameter family of PDEs. Symmetry of a PDE leads to invariant subspaces, and these are computed automatically by the suite of GNGA programs. The PDE on the Sierpinski Gasket has an infinite number of invariant subspaces beyond those forced by the symmetry. This talk will describe how our incomplete understanding of the anomalous invariant subspaces for the Sierpinski Gasket can be used to improve the performance of the GNGA.

Algebra Combinatorics Geometry and Topology (ACGT) Seminar meets Tuesdays, 12:45 – 1:45 pm, AMB 164. On Tuesday January 20th, Mike Falk will talk (after brief organizational meeting) on "The Orlik-Solomon algebra: differential forms and cohomology."

Applied Math Seminar (AMS) meets Thursdays, 12:45 – 1:45 pm, AMB 164. On January 22nd, John Neuberger will speak about "Spectral Decimation and the Sierpinski Gasket."

Friday Afternoon Undergraduate Mathematics Seminar (FAMUS) meets Fridays, 3pm, starting this Friday January 23rd.