



Differential Equations and Applied Math Seminar

Dr. Mark Embree, Virginia Tech.

11am-12pm March 6th, 2020

336 Derrick Hall

Title: Contour Integral Methods for Nonlinear Eigenvalue Problems

Abstract: Nonlinear matrix eigenvalue problems exhibit fascinating structure: for example, finite dimensional problems can have infinitely many eigenvalues. Lacking a settled, general-purpose method for solving such problems, the field is at a dynamic stage of algorithmic innovation. A class of methods based on complex contour integration shows great promise. We will introduce this class of methods, establishing a connection to interpolation theory for dynamical systems, a popular tool in control theory. This link motivates a new algorithm for the nonlinear eigenvalue problem based on rational interpolation. This technique draws upon elegant Loewner matrix tools developed by Mayo and Antoulas for data-driven system realization.

This is joint work with Michael Brennan and Serkan Gugercin

Interested faculty and graduate students are encouraged to attend.