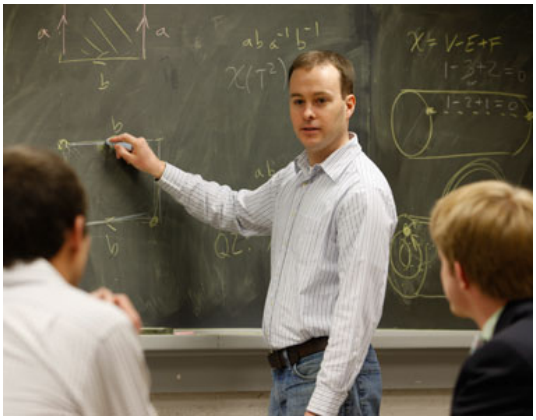
VCU Discrete Mathematics Seminar

Recent Developments in Nonlinear Perron-Frobenius Theory

Prof Brian Lins
(Hampden-Sydney College)

Tuesday, Sept. 24 (SPECIAL DAY)
1:00-1:50 EDT

In person! in 4145 Harris Hall, and Zoom @
`https://vcu.zoom.us/j/92975799914`
`password=graphs2357`



A nonnegative n-by-n matrix is irreducible if its corresponding directed graph is strongly connected. The Perron-Frobenius theorem guarantees that an irreducible matrix has a unique (up to scaling) positive eigenvector with eigenvalue equal to the spectral radius. Multiplicatively topical maps are order-preserving and homogeneous maps on the cone of nonnegative vectors in Rn that generalize nonnegative matrices. We'll look at combinatorial and hypergraph conditions analogous to irreducibility for topical maps that guarantee existence and uniqueness of positive eigenvectors. We'll also discuss examples of topical maps including max-algebra linear transformations and an example from XKCD.

For the DM seminar schedule, see:

`https://go.vcu.edu/discrete`