The Math Colloquium
Department of Mathematics
San José State University

Efrem Rensi

UC Davis

Krylov Subspaces and Their Application to Model Order Reduction

November 17, 2010, MH320

Abstract: Given a matrix H and vector r, the n-th Krylov subspace $\mathcal{K}_n(H, r)$ is the space spanned by the vectors $r, Hr, H^2r, \ldots, H^{n-1}r$. Krylov subspaces are used extensively in numerical linear algebra, but computing a basis for one is non trivial. I will explain why explicitly computing Hr, H^2r, H^3r is not numerically feasible, and discuss a few strategies for generating a basis for a Krylov subspace. Finally, I will talk about how Krylov subspaces are used in my field of research, Model Order Reduction.

Background: One semester of linear algebra. It will be helpful, but not necessary, to have experience with differential equations and Taylor series approximation.

About the speaker: Efrem Rensi is a 5th year Ph.D. student in Applied Math at UC Davis. He graduated from SJSU with a B.S. in Applied Math in 2006.

Snacks in MH331B at 2:30 pm
Talk starts at 3 pm

For more information, see our full schedule at:

`http://www.math.sjsu.edu/~hsu/colloq/`