

# Applied Mathematics Seminar

Krylov Subspace Methods with Short Term Recurrences  
for Nearly Hermitian Matrices

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Abstract:

The GMRES iterative method for solving linear systems requires a  $k$ -term recurrence at step  $k$  to create an orthonormal basis for the approximating space. However, for Hermitian coefficient matrices, this recurrence is equivalent to a 3 term recurrence. But what if you happen to be a matrix that is *nearly* Hermitian? In this talk, we will take nearly to be in the sense of rank. In this talk we will explain why a previous approach of applying GMRES to this structure is so clever and so unstable. We give an alternate approach for nearly Hermitian matrices that allows to only use 3 term recurrences to construct approximating spaces.

**Date: Tuesday, February, 9, 2016      Time: 3:00-4:00PM**  
**Place: MAGC 1.302**

Coffee will be served. For further information or for special accommodations, please contact Dr. Ranadhir Roy at 665-2371 or via email at [rroy@utrgv.edu](mailto:rroy@utrgv.edu)