1057-65-329 **Ren-Cang Li*** (rcli@uta.edu), Department of Mathematics, University of Texas at Arlington, Arlington, TX 76019. *Perturbation of Partitioned Hermitian Generalized Eigenvalue Problem.*

We are concerned with Hermitian positive definite generalized eigenvalue problem $A - \lambda B$ for partitioned

$$A = \begin{pmatrix} A_{11} & \\ & A_{22} \end{pmatrix}, \quad B = \begin{pmatrix} B_{11} & \\ & B_{22} \end{pmatrix},$$

where both A and B are Hermitian and B is positive definite. Bounds on how its eigenvalues varies when A and B are perturbed by Hermitian matrices. These bounds are generally of linear order with respect to the perturbations in the diagonal blocks and of quadratic order with respect to the perturbations in the off-diagonal blocks. The results for the special case of no perturbations in the diagonal blocks can be used to bound the changes of eigenvalues of a Hermitian positive definite generalized eigenvalue problem after its off-diagonal blocks are dropped, a situation occurs frequently in eigenvalue computations.

Stewart and Sun (1990) observed that different copies of a multiple eigenvalue for the generalized eigenvalue problem may behave very differently. Recently, Nakatsukasa (2009) successfully obtained quantitative estimates to explain the behavior. In this talk, we will present different estimates. (Received January 25, 2010)