1108-65-490 **Zhonggang Zeng*** (zzeng@neiu.edu), Department of Mathematics, Northeastern Illinois University, Northeastern Illinois University, Chicago, IL 60625. *Computing a defective eigenvalue using perturbed matrix data.* Preliminary report.

Multiple defective eigenvalues are infinitely sensitive to data perturbations and present a challenge in numerical computation. In this talk, we present an error analysis on a defective eigenvalue under constrained perturbation so that the smallest elementary Jordan block size is preserved. We prove that the sensitivity of a defective eigenvalue is finitely bounded under such constrained perturbations. An iterative algorithm based on Gauss-Newton iteration is designed to take advantage of such a well-posedness and is capable of calculating defective eigenvalues accurately without extending the hardware precision even if the matrix data is perturbed. The resulting algorithm is applicable in the computation of numerical Jordan Canonical Forms of matrices. (Received January 19, 2015)