1135-65-2353 **Eugene Vecharynski*** (evecharynski@lbl.gov), **Fei Xue** and **Chao Yang**. *Generalized Preconditioned Locally Harmonic Residual Method for large non-Hermitian eigenproblems.*

We introduce the generalized preconditioned locally harmonic residual (GPLHR) method for solving standard and generalized non-Hermitian eigenproblems. The method is particularly useful for computing a subset of eigenvalues, and their eigen- or Schur vectors, closest to a given shift. The proposed method is based on block iterations and can take advantage of a preconditioner if it is available. It does not need to perform exact shift-and-invert transformation. Standard and generalized eigenproblems are handled in a unified framework. Our numerical experiments demonstrate that GPLHR is generally more robust and efficient than existing methods, especially if the available memory is limited. (Received September 26, 2017)