1097-65-388 **Thomas Lewis*** (tllewis3@uncg.edu) and **Michael Neilan** (neilan@pitt.edu). *The Dual-Wind Discontinuous Galerkin Method.*

A new symmetric discontinuous Galerkin method for second order elliptic problems will be proposed. We show that the numerical method has a unique solution without the introduction of interior or boundary penalizations. Thus, the numerical method features a way to naturally enforce boundary conditions and address the issues associated with a fully discontinuous solution space. The key building block for the method will be the introduction of one-sided discrete derivative operators for piecewise weakly differentiable functions. Using both the up-wind gradient operator and the down-wind gradient operator, we formulate the new discontinuous Galerkin method that is symmetric when written in primal form. We will also summarize the convergence results as well as provide numerical test results that demonstrate the optimal convergence rates for the proposed numerical method. (Received January 27, 2014)