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Chunmei Wang* (chunmei.wang@ttu.edu), 2500 Broadway, Lubbock, TX 79424. *A New Primal-Dual Weak Galerkin Finite Element Method for Ill-posed Elliptic Cauchy Problems.*

The speaker will present a new numerical method which is devised and analyzed for a type of ill-posed elliptic Cauchy problems by using the primal-dual weak Galerkin finite element method. This new primal-dual weak Galerkin algorithm is robust and efficient in the sense that the system arising from the scheme is symmetric, well-posed, and is satisfied by the exact solution (if it exists). The speaker will show some numerical results to demonstrate the efficiency of the primal-dual weak Galerkin method as well as the accuracy of the numerical approximations. (Received September 13, 2018)