



DEPARTMENT OF MATHEMATICS AND STATISTICS

COLLOQUIUM

Speaker: Dr. Yanqiu Wang, Oklahoma State University

Title: Discrete maximum principle for the weak Galerkin method

Date: April 24, 2015

Room/Time:	Refreshments:	2:30 p.m.	Room 222 MM
	Talk:	3:00 p.m.	Room 224 MM

Host: Dr. Mohamed Sulman

ABSTRACT:

In this talk we consider the discrete maximum principle (DMP) for the weak Galerkin (WG) discretization of a general anisotropic diffusion problem. Brief introduction to DMP and WG will be given. It turns out that the stiffness matrix of the discretization is not an M-matrix in general, and therefore the theory of M-matrices, which has been commonly used for the study of DMP, cannot be applied. To avoid this difficulty, a reduced system is first obtained by eliminating certain degrees of freedom and is shown to satisfy DMP under suitable mesh conditions. Then we establish DMP for the full weak Galerkin approximation. Numerical examples, including DMP-compatible mesh generation using BAMG, will be reported. This talk is based on a joint work with Dr. Weizhang Huang.

ABOUT THE SPEAKER:

Dr. Wang received her Ph.D. in Mathematics from Texas A&M University in 2004. She has worked at Ohio State University since 2007 and achieved the rank of Associate Professor in August of 2013. Prior to her employment at Oklahoma State she worked as a Visiting Assistant Professor at Perdue University. Her research interests include iterative methods for linear systems, finite element methods for PDEs, domain decomposition, and multigrid methods.