

A Priori Error Analysis for a Nonconforming Virtual Element Method for the Monge-Ampère Equation

Scott Congreve

Charles University, Faculty of Mathematics and Physics, Prague, Czech Republic
CONGREVE@KARLIN.MFF.CUNI.CZ

Abstract

The Monge-Ampère equation is a well known example of a fully nonlinear second-order partial differential equation. By use of the vanishing moment method [1] it is possible to approximate the solution as a fourth-order quasilinear partial differential equation. In this talk, we consider a C^1 -nonconforming virtual element method (VEM) approximation of this quasilinear PDE that is C^0 -conforming. We show the existence of the solution of this approximation, and derive optimal a priori error estimates in the H^2 -, H^1 -, and L^2 -norms.

References

- [1] X. Feng and M. Neilan. Mixed finite element methods for the fully nonlinear Monge-Ampère equation based on the vanishing moment method. *SIAM Journal on Numerical Analysis*, 47(2):1226–1250, 2009.