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Structure-preserving finite element methods for stationary incompressible magnetohydrodynamics.

Magnetohydrodynamics (MHD) models have various important applications in liquid metal industry, controlled fusion and astronomy etc. There have been extensive discussions on numerical methods for MHD models. However, due to the complicated nonlinear coupling and rich structures of MHD systems, the numerical simulation still remains a challenging and active research area. In this talk We discuss three finite element schemes for stationary magnetohydrodynamics (MHD) systems. In all cases, the schemes provide optimal convergence for the primary unknowns under minimal regularity assumptions for the exact solution. (Received August 13, 2018)