

1086-65-815

Qiang Du and **Lili Ju***, Department of Mathematics, University of South Carolina, Columbia, SC 29208, and **Li Tian** and **Kun Zhou**. *A Posteriori Error Analysis of Finite Element Methods for Linear Nonlocal Diffusion and Peridynamic Models*.

In this talk, we present some results on a posteriori error analysis of finite element methods for solving linear nonlocal diffusion and bond-based peridynamic models. In particular, we aim to propose a general abstract framework for a posteriori error analysis of the peridynamic problems. A posteriori error estimators are consequently prompted, the reliability and efficiency of the estimators are proved. Connections between the a posteriori error estimations of the nonlocal problems and that of the related classical partial differential equation based problems are studied within continuous finite element spaces. Some numerical experiments are also given to test the theoretical conclusions. (Received September 13, 2012)