Euan Spence (Université de Bath)

Frequency-explicit local error analysis of the FEM applied to the highfrequency Helmholtz equation

On the one hand, how the global Finite Elements Method (FEM) error depends on frequency for the high-frequency Helmholtz equation has been intensively studied since the work of Ihlenburg and Babuska in the 1990's. On the other hand, the local FEM error for second-order elliptic partial differential equations has been studied since the work of Nitsche and Schatz in 1974. Perhaps surprisingly, therefore, how the local FEM error depends on frequency for the high-frequency Helmholtz equation has apparently not been rigorously studied in the numerical-analysis literature. This talk will report some new results on this topic obtained in collaboration with Martin Averseng (Université d'Angers) and Jeffrey Galkowski (University College London).