LTCC Advanced Course

Title: Numerical Analysis of the Helmholtz Equation

Basic Details:
- Core Audience: 3rd year app. and postgrad
- Course Format: Extended: 5 x 2hr lectures

Course Description:
- Keywords: high frequency, finite element, boundary element, quasioptimality

- Syllabus: This course will introduce the modern theory of high frequency numerical analysis for the Helmholtz equation. The course will discuss both boundary element and finite element methods in this context. We will investigate error bounds on the numerical solution, requirements on the finite element space to obtain quasioptimality for both methods. Time permitting, we will discuss the analysis of various methods for truncating domains.

- Recommended reading: For background on numerical methods: Strongly elliptic systems and boundary integral equations, by W. McLean

- Prerequisites: Basic functional analysis and spectral theory, background in numerical methods including finite element and boundary elements will be helpful but is not required

Format:
- Electronic lecture notes will be provided

Lecturer Details:
- Lecturer: Professor Jeffrey Galkowski
- Lecturer home institution: University College London
- Lecturer e-mail: j.galkowski@ucl.ac.uk