

***NON-UNIFORM FINITE-ELEMENT MESHES DEFINED BY
RAY DYNAMICS FOR HELMHOLTZ TRAPPING PROBLEMS***

**Speaker: Euan Spence
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Time: Thu, Mar. 21, 20:00-21:00

Venue: Zoom: 618-038-6257, Password: SCMS

Abstract: A very popular method for computing approximations to the solution of the Helmholtz equation is the finite-element method (FEM), which approximates the solution as a piecewise polynomial on a mesh. When the polynomial degree is fixed and the mesh is uniform, the question of how the meshwidth must depend on the frequency has been a classic question in numerical analysis since the 1990s, and is now well-understood. This talk introduces non-uniform meshes that allow trapping problems to be solved with fewer degrees of freedom than with a uniform mesh. These new meshes are designed using results and techniques from microlocal analysis. (No prior knowledge of the finite-element method will be assumed in the talk!) This is joint work with Martin Averseng (CNRS, Angers) and Jeff Galkowski (University College London)