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Applying semiclassical analysis to the numerical analysis of the Helmholtz equation

Abstract: The goal of this talk is to give a concrete example of how relatively-simple tools of semiclassical analysis (appearing, for example, in the course “Basics of Microlocal Analysis and Distribution Theory” in this summer school) can be used to address important questions in the numerical analysis of the Helmholtz equation $\Delta u + k^2 u = 0$ in the high frequency ($k \rightarrow \infty$) limit.

No prior knowledge of any numerical analysis will be needed to understand this talk!

Joint work with David Lafontaine (University of Bath) and Jared Wunsch (Northwestern University).