

MATHEMATICS DEPARTMENT SEMINAR

The Asymptotic Fundamental Solution to a Perturbed Telegrapher's Equation



Dr. Hualong Feng



California State University Bakersfield



2:00 PM TO 3:00 PM



Wednesday, September 30, 2026



Science III, Room 123

Abstract

For linear partial differential equations, a fundamental solution can often be derived to assist in the solution of the equation. Specifically, the fundamental solution is convoluted with a boundary and/or initial condition to obtain a solution. A fundamental solution is often derived by Laplace/Fourier transforming the equation into the spectrum domain and then transforming back to the space/time domain. The inverse transform can often be difficult in that a closed form is hard to obtain. The difficulty can sometimes be obviated if the equation in question is a small perturbation of some other well known equation. The method of matched asymptotic expansions (MMAE) is often used for this singular perturbation analysis. This method, however, is typically effective only when the two matching fronts are sufficiently well behaved. In our case, the matching fronts contain singularities. We will demonstrate how MMAE can be adapted for our purpose.



STUDENTS ARE WELCOME!