

ACMS Grad and Postdoc Seminar

Hunter La Croix
University of Notre Dame
Friday, Oct. 30, 2026
154 Hurley Hall
12:30 PM – 1:30 PM

Least-Squares Series Solution to PDEs in First Passage Time Problems

In this talk, we will discuss how series solution methods, which has terms that already solve an underlying PDE and coefficients that fit to boundary data, have potential to solve many of the PDEs that are of interest in 2-dimensional first passage time problems, including mean first passage and reaction times, splitting, diffusion, shielding and capacitance problems. Problems on smooth geometries without abrupt switches in boundary conditions can generally be solved with exponential convergence with stability thanks to an Arnoldi orthogonalization algorithm. Root-exponential convergence for problems on sharper geometries and/or changes in boundary conditions from Dirichlet/Neumann/Robin can be recovered thanks to a Lightning solver approach. The different methods are explained and benchmarked against existing methods commonly used in FPT application.

The Department of Applied and Computational
Mathematics and Statistics
Please visit acms.nd.edu to view the full list of speakers.