

*Department of Mathematics,
University of California San Diego*

Center for Computational Mathematics Seminar

Albert Chern

UC San Diego, Department of Computer Science and Engineering

An Exact Discretization of Reflectionless Boundaries for Wave Equations

Abstract:

This talk concerns a classical problem in computational wave propagations: How does one truncate an infinite domain to a finite size without introducing reflection waves from the artificial boundaries? The state-of-the-art approach is attaching to those boundaries a perfectly matched layer (PML). In the continuous theory, PMLs are subject to an analytically continued wave equation that damps all incident waves without creating any interfacial reflection. However, it is believed that “numerical reflections” are unavoidable after discretization. In this talk, I will demonstrate a truly reflectionless discrete PML. The key is to uncover the geometric mechanism hidden in the differential calculus formalism; in discretizing the theory, approximations are the best one can hope for the latter, while the former often admits exact discretization.

Tuesday, October 20, 2020

11:00 AM

Zoom Meeting ID: 926 7798 0955
