

Implicit boundary integral methods and applications

11:30 Friday Oct 16

<https://njit.webex.com/njit/j.php?MTID=m678ede5b36496edc375c274c1e6ebd95>

Abstract

I will talk about the implicit boundary integral methods. It is a general framework that can be applied to solve a variety of problems that involve non-parametrically represented surfaces. The main idea is to formulate appropriate extensions of a given problem defined on a surface to ones in the narrow band of the surface in the embedding space. The extensions are arranged so that the solutions to the extended problems are equivalent, in a strong sense, to the surface problems that we set out to solve. Such extension approaches allow us to analyze the well-posedness of the resulting system, develop systematically and in a unified fashion numerical schemes for treating a wide range of problems that involve both differential and integral operators, and deal with similar problems in which only point clouds sampling the surfaces are given. We will apply this framework to solve some surface PDE problems, boundary integral equations, and optimal control problems.

Speaker

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