Computational Topics on the Solution of Integral Equations

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Declaration

I, Srinath Kailasa, confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

Abstract

Integral equation methods are a powerful technique for the solution of the boundary value problems that arise from electromagnetic and acoustic scattering. This is due to the fact that they reduce problems defined over unbounded domains into ones defined by a boundary integral. The principle drawback of such methods is the dense linear matrix that must be either applied or inverted in the resulting linear system upon discretisation, depending on whether one is solving the forward or inverse problem. The past three decades have seen the development of techniques that allow for the

This thesis is concerned with the development of simulation methods and software for the rapid forward and inverse applications of the discrete operators arising in boundary integral formulations of scattering problems, the overarching goal being fully parallelised simulation software for the

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Introduction

1.1   First Section

This is a reference [1].

Bibliography

[1] Denis Zorin Lexing Ying George Biros. "A kernel-independent adaptive fast multipole algorithm in two and three dimensions". In: *Journal of Computational Physics* 196.2 (2004), pp. 591–626. DOI: `http://dx.doi.org/10.1016/j.jcp.2003.11.021`.