

Fast Direct Solvers for the Solution of Integral Equations

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Abstract

So called ‘fast direct solvers’ offer an $O(N)$ alternative to iterative methods ($O(n_{iter} \cdot n)$) for the solution of integral equations, and therefore are a rapidly developing field of research. In this document, I summarise the recent research in this direction in the context of computing the solution of acoustic and electromagnetic scattering problems ¹.

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¹These notes were written up during my visit to the Flatiron Institute in New York City in the Summer of 2022. A wonderful experience for which I am extremely grateful. The visit gave me both the impetus and the time to study some truly interesting and beautiful concepts.

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