

## **Singular Integral Transforms and Fast Numerical Algorithms**

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Received November 6, 1997; revised May 28, 1998

Communicated by M.H. Gutknecht

Fast algorithms for the accurate evaluation of some singular integral operators that arise in the context of solving certain partial differential equations within the unit circle in the complex plane are presented. These algorithms are generalizations and extensions of a fast algorithm of Daripa [11]. They are based on some recursive relations in Fourier space and the FFT (Fast Fourier Transform), and have theoretical computational complexity of the order  $O(\log N)$  per point, where  $N^2$  is the total number of grid points. An application of these algorithms to quasiconformal mappings of doubly connected domains onto annuli is presented in a follow-up paper.

Appeared: *Numer. Algor.*, 18, pp. 133-157, 1998.