

ICM-9303-52 Fast Solution of a Class of Periodic Pseudodifferential Equations, L. Reichel and Y. Yan.

ABSTRACT This paper presents a new quadrature method for discretizing periodic pseudodifferential equations. The principal part is discretized by a product rule and the smooth remaining part is discretized by the rectangular rule. This discretization yields as rapid convergence of the truncation error as discretization by global spectral methods, and gives rise to a linear system of algebraic equations with a structure that enables rapid solution by iterative methods. We present error bounds for the discretization and discuss the convergence of an iterative method.