# ITERATIVE FOURIER RECONSTRUCTION - STABILITY OF THE INTERPOLATION PROBLEM

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## Abstract

The evaluation of trigonometric polynomials at a finite collection of arbitrary nodes can be seen as a particular matrix vector product with a Vandermonde-like matrix. Fast approximative algorithms for this task are known only for the last ten years. The talk presents fast algorithms for the iterative solution of the corresponding linear system of equations. These algorithms are based on conjugate gradient type methods. Explicit bounds for the condition of the normal equations, thus for the rate of convergence, will be presented. These estimates are based only on simple geometric properties of the sampling nodes, e.g. on the separation distance. Numerical examples confirm the theoretical results.