ABSTRACT

GREGORY DEBRUYNE

Title: On the asymmetric Beurling-Selberg problem

Abstract: The original Beurling-Selberg problem searches, given a locally integrable function f on $\mathbb{R}$, for the function G of exponential type 2π that minimizes the quantity $\int_{-\infty}^{\infty} |f(x) - G(x)| \mathrm{d}x$. The relevance of this approximation problem lies in the fact that functions of exponential type have a compactly supported Fourier transform which can be very helpful in some applications. However, for most applications, especially in number theory, one often requires additionally that the function G is either a majorant or minorant of the function f. We shall introduce a new asymmetric version of the Beurling-Selberg problem that interpolates between the original problem and the one where the approximation G is a majorant/minorant. We will also discuss a general scheme for addressing this problem, establish the solution for a large class of even functions f and mention some applications.

The talk is based on collaborative work with Jasson Vindas, Frederik Broucke and Emanuel Carneiro.