Lower bounds of L^1-norms of non-harmonic trigonometric polynomials

Philippe Jaming

In this talk, we will present quantitative lower bounds of the L^1 norm of a non-harmonic trigonometric polynomial of the following form:

– let $T > 1$;

– let $(\lambda_j)_{j\geq 0}$ be a sequence of non-negative real numbers with $\lambda_{j+1} - \lambda_j \geq 1$;

– let $(a_j)_{j=0,\ldots,N}$ be a finite sequence of complex numbers. Then

$$C(T)\sum_{j=0}^{N}\frac{|a_j|}{j+1} \leq \frac{1}{T}\int_{-T/2}^{T/2}\left|\sum_{j=0}^{N} a_j e^{2i\pi\lambda_j t}\right| \,\mathrm{d}t$$

where $C(T)$ is an explicit constant that depends on T only. This provides a quantitative statement of a result by F. Nazarov.

The L^2 analogue is Ingham's Inequality and the harmonic case (λ_j integers) is McGehee, Pigno, Smith's solution of the Littlewood conjecture.