SEMINARI D'ANÀLISI UAB-UB **Curs 2011–2012**

Febrer del 2012

Estimates for Dirichlet polynomials

KRISTIAN SEIP

Norwegian University of Science and Technology (Trondheim, Norway)

SCHEDULE:

February 20th, 16:00 to 17:00 (right afther the Analysis Seminar)

February 21st, 15:00 to 16:00

February 22nd, 11:00 to 12:00

February 23rd, 11:00 to 12:00

PLACE: Centre de Recerca Matemàtica

CONTENTS:

Let N be a positive integer and $a_1, ..., a_N$ be complex numbers. We denote by $S(N)$ the supremum of the ratio between $|a_1| + \cdots + |a_N|$ and $\sup_{t\in\mathbb{R}} |a_1 + a_2 2^{it} + \cdots + a_N N^{it}|$, with the supremum taken over all possible choices of nonzero vectors $(a_1, ..., a_N)$ in $\mathbb{C}^N$. In a series of four essentially independent lectures, I will discuss the following remarkable result:

$$S(N) = \sqrt{N} \exp\left((-\frac{1}{\sqrt{2}} + o(1)) \sqrt{\log N \log\log N} \right)$$

when $N \to \infty$. This formula has a long history and relies on the contribution of many researchers, including H. Bohr, Bohnenblust–Hille, Queffélec, Queffélec–Konyagin, de la Bretèche, and finally Defant–Frerick–Ortega-Cerdà–Ounaïes–Seip. The proof involves several interesting techniques that will be highlighted and discussed during the lectures.