

Seminar on Complex Analysis

Meeting 2064, 23th April 2012

lecture: **Growth estimates of entire functions on \mathbb{C}^n of finite order and type along certain complex lines**

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abstract: This lecture is a report on a joint work with Jöran Bergh, Chalmers University of Technology and University of Gothenburg, Sweden. We prove that an entire function on \mathbb{C}^n which is of finite order and type along a set of lines through the origin with direction vectors in a non-pluripolar set E is of the same order in the whole space and we estimate its radial indicator function in terms of Siciak's homogeneous extremal function for the set E . By using an explicit formula for Siciak's function for the circular hull of the closed unit ball in \mathbb{R}^n we are able describe its polynomial hull and conclude that every entire function which is of exponential type σ along $\mathbb{C}\mathbb{R}^n$ is of exponential type $\leq \sqrt{2}\sigma$ in the whole space. Furthermore, we are able to relax conditions in the Paley-Wiener by only assuming that a function is entire and of exponential type in non-pluripolar circular set of directions and of polynomial growth in real directions in order to conclude that it is the Fourier-Laplace transform of a distribution with compact support.