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Mathematical Colloquia

Monday, 11 March 2024

17:15 h, lecture room B6 (ExWi)

Dr. Tobias Harz, Universität Wuppertal / Bern

Plurisubharmonic defining functions for pseudoconvex domains

Abstract : Complex analysis investigates functions of complex numbers, in particular holomorphic functions. What kind of holomorphic functions can be constructed on a given domain, depends heavily on properties of the domain, especially in dimensions larger than 1. Therefore, many questions in the analysis of several complex variables are not concerned directly with holomorphic functions, but instead with properties of special classes of domains, the so-called pseudoconvex domains.

Many of the relevant properties pseudoconvex domains have, or can have, are formulated with a potential-theoretic conception, in particular in terms of so-called plurisubharmonic functions. For example, a domain in complex Euclidean space is pseudoconvex, by definition, if it admits a plurisubharmonic exhaustion function.

In this talk we will discuss some of the basic results from the analysis of several complex variables, introduce the notions of pseudoconvex domains and plurisubharmonic functions, and briefly discuss the question of existence of plurisubharmonic defining functions for pseudoconvex domains.