



Im Rahmen der

AG Komplexe Analysis

laden wir zu folgender Vortragsreihe ein:

Applications of the Pluripotential Theory

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Die Vorträge finden statt in der Zeit **11.05.2023 bis 30.05.2023** in den Räumen G.15.25 und G.10.03 (Hörsaal 08) der Bergischen Universität Wuppertal.

Lecture 1 & 2 (Thursday, 11.05., 16:00-18:00, G.15.25)

1. Plurisubharmonic functions. Operator $dd^c u$.
We give a definition of plurisubharmonic (psh) functions in terms of the operator $dd^c u$. Further, we prove simple properties of psh functions.
2. Connection of plurisubharmonic functions with holomorphic functions of several complex variables.
We establish important relationships of plurisubharmonic functions with holomorphic functions.

Lecture 3 & 4 (Tuesday, 16.05., 16:00-18:00, G.10.03)

3. Capacity of condenser.
We introduce the concept of condenser capacity in terms of Monge-Ampere operator $(dd^c u)^n$.
4. Solutions of the Lelong's first problem.
We prove the global pluripolarity of locally pluripolar sets using the condenser capacity.

Lecture 5 & 6 (Monday, 22.05., 16:00-18:00, G.10.03)

5. Pluripolarity of pseudoconcave sets – I.
We study pseudoconcave sets and their properties. In particular, we prove a number of geometric properties of such sets along one chosen direction.
6. Pluripolarity of pseudoconcave sets – II.
We continue our study of pseudoconcave sets and focus our considerations on pseudoconcave sets which are also pluripolar.

Lecture 7 & 8 (Tuesday, 23.05., 16:00-18:00, G.10.03)

7. Analytic multifunctions. Criteria.

An analytic multifunction is a pluripolar pseudoconcave set. In many situations, analytic multifunction behaves like the graph of a holomorphic function. Here we give a very convenient criterion for the analytic multifunction.

8. Theorem of Shcherbina.

We discuss the result of Shcherbina on analyticity of finitely-valued analytic multifunctions and some results related to it.

Lecture 9 & 10 (Thursday, 25.05., 16:00-18:00, G.15.25)

9. Analytic measures.

For an analytic multifunction S the maximum modulus of polynomials is achieved on the boundary ∂S . Therefore, the Jensen measure of the algebra of polynomials $P(\overline{S}) = P(\partial S)$ is concentrated on the boundary ∂S . It will be proved that this measure is analytic.

10. Rapid rational approximations. Class R^0 . Gonchar Theory.

Gonchar proved that functions of the class R^0 , i.e. functions which can be quickly rationally approximated, are single-valued in their natural domain of existence. In this lecture we will prove a number of important properties of the class R^0 .

Lecture 11 & 12 (Tuesday, 30.05., 16:00-18:00, G.10.03)

11. Class R^0 and Pade approximations. Class R^0 in \mathbb{C}^n . Criteria for R^0 .

We establish a connection between the class R^0 with the Pade approximations. We will also introduce the class R^0 in \mathbb{C}^n . Let $f(z) = a_0 + a_1z + a_2z^2 + \dots$ be a germ of the function f at the point 0. The criterion for R^0 will be given in terms of the coefficients $a_0, a_1, a_2 + \dots$.

12. Problem $O(D) \subset R^0$. Description of D .

Using the pluripotential theory we prove, that for a domain $D \subset \mathbb{C}^n$ the class $O(D) \subset R^0$ if and only if $\mathbb{C} \setminus \hat{D}$ is a pluripolar set.

Alle Interessenten sind herzlich eingeladen!

gez. Prof. N. Shcherbina