



Leibniz  
Universität  
Hannover

## Oberseminar Analysis und Theoretische Physik

**ONLINE**

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CIMAT, Guanajuato, Mexico

## Radial Toeplitz operators on Bergman spaces

In this talk, we will first discuss Toeplitz operators acting on the Bergman space over the unit disc  $\mathbb{D}$  with radial symbols, which are defined as those satisfying  $a(z) = a(|z|)$  for every  $z \in \mathbb{D}$ . It was first discovered by Korenblum-Zhu that the Toeplitz operators with such symbols mutually commute, and so generate a commutative  $C^*$ -algebra.

We will also discuss a higher dimensional generalization obtained on matrix domains that generalize the unit disk. More precisely, we consider the Cartan domain of type I  $D_{n \times n}^I$  which consists of the  $n \times n$  complex matrices  $Z$  satisfying  $Z^*Z < I_n$ . Bergman spaces and Toeplitz operators will also be defined in this case, and we will consider symbols on  $D_{n \times n}^I$  that satisfy either of the following conditions

1.  $a(Z) = a((Z^*Z)^{\frac{1}{2}})$  for all  $Z \in D_{n \times n}^I$ .
2.  $a(Z) = a((ZZ^*)^{\frac{1}{2}})$  for all  $Z \in D_{n \times n}^I$ .

We will show that for  $n \geq 2$ , these conditions are not equivalent. However, both are equivalent to invariance with respect to a corresponding subgroup of the biholomorphisms fixing the origin. We will use representation theory to obtain several algebras generated by Toeplitz operators with these special kind of symbols. This will provide commutative and non-commutative algebras that can be either  $C^*$  or only Banach.

## Dienstag, 14.06.2022, 15:00 Uhr

Interessierte erhalten die Zugangsinformationen von Herrn Prof. Dr. Wolfram Bauer ([bauer@math.uni-hannover.de](mailto:bauer@math.uni-hannover.de)).

Mitglieder des Oberseminars haben Zugang über die Meetings der StudIP-Veranstaltung "Oberseminar Analysis und Theoretische Physik".

Dazu laden herzlich ein:

Prof. Dr. Wolfram Bauer, Prof. Dr. Joachim Escher, Prof. Dr. Johannes Lankeit,  
Prof. Dr. Elmar Schrohe, Prof. Dr. Christoph Walker