UNIVERSITÄT DES SAARLANDES
Fakultät für Mathematik und Informatik
Fachrichtung Mathematik

Mathematisches Kolloquium

Am Freitag, dem 06. Januar 2017 spricht um 14 Uhr c. t. im Hörsaal IV
der Fachrichtung Mathematik (Gebäude E2 4)

Dr. Michael Hartz
Washington University, St. Louis

über das Thema:

von Neumann's inequality for commuting operators

Abstract: von Neumann's inequality provides a fundamental link between analytic functions
in the unit disc and contraction matrices, and more generally contraction operators on Hilbert
space. It asserts that if T is a contraction and p is a polynomial, then

$$||p(T)|| \leq \sup\{|p(z)| : |z| \leq 1\}.$$

A theorem of Andô implies an analogous inequality for pairs of commuting contractions
and polynomials in two variables. Remarkably, the corresponding statement for three or more
commuting contractions is false. The first counterexamples were found in the early seventies,
but this phenomenon is still not well understood and many questions remain open.

I will talk about von Neumann's original inequality and about some of the challenges that
arise in several variables. In particular, I will mention a recent positive result for a particular
test class of operators which settles a question of Lubin and Shields.

Alle Interessenten sind zum Vortrag herzlich eingeladen.

Kaffee und Tee ab 13.45 Uhr im Koferenzraum   (Erdgeschoss, Raum 1.03)

Die Dozenten der Mathematik