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Raum: G.15.19

Im Rahmen der

## AG Komplexe Analysis

laden wir zu folgendem Vortrag ein:

### Homotopic properties of holomorphic mappings

(Prof. Evgeny A. Poletsky, Syracuse University, USA)

am **Dienstag, den 19.04.2016, um 16 Uhr c.t. in Raum G.15.25.**

**Abstract:** Let  $W$  be a domain in a complex manifold  $M$ . In 2008 B. Jöricke found a way to extend holomorphic functions from  $W$  to another manifold and show that it is the envelope of holomorphy of  $W$  and in 2013 F. Lárusson and the speaker used a similar approach to subextend plurisubharmonic functions from  $W$  to a complex manifold. To define these manifolds the authors considered the space  $\mathcal{A}(W, M)$  of analytic disks in  $M$  whose boundaries lie in  $W$ . The new manifolds were defined as the quotients of this space by equivalence relations, where equivalent analytic disks can be connected by a continuous path or a homotopy in  $\mathcal{A}(W, M)$ .

In 1983 L. Rudolph introduced quasipositive elements of braid groups that are fundamental groups of the complements to some set  $W$  of planes in  $\mathbb{C}^n$ . He proved that these elements are boundaries of analytic disks in  $\mathcal{A}(W, \mathbb{C}^n)$  and form a semigroup.

The talk will be divided in two parts. In the first part we will discuss general constructions of extensions of Riemann domains and subextensions of plurisubharmonic functions. In the second part we will address the notion of quasipositive elements in general situation and explain why they form a semigroup.

An important question is whether this semigroup is imbeddable into the fundamental group. That is equivalent of asking whether two analytic disks are homotopic as analytic disks when their boundaries are equivalent in the fundamental group. A similar problem was studied by M. Gromov and, recently, by F. Forstnerič and his colleagues for homotopies of submanifolds in elliptic manifolds. In our case the ambient manifold is hyperbolic and the answer is not known. In the special case is when  $W$  is an analytic variety in  $M$  we will show that this problem can be reduced to the problem involving only real disks.

Alle Interessenten sind herzlich eingeladen!

gez. Prof. N. Shcherbina