Universität Stuttgart

mathematik physik fakultät8

Kolloquium
des Fachbereichs Mathematik

Es spricht am Montag, **15. Juli 2024** um **14:00 Uhr**

Ass.-Professor Dr. Martin Kalck (Universität Graz)

zum Thema: **"Paths into Transcendence“**

Abstract

Algebraic numbers $\overline{\mathbb{Q}} \subset \mathbb{C}$ are complex numbers that are roots of polynomials with rational coefficients. All other complex numbers are called *transcendental*. It is typically a hard question to decide whether a given complex number is transcendental.

A more general, classical question in 'transcendental number theory' (cf. e.g. works of Lindemann and Weierstraß, Gelfond and Schneider, Baker, Wüstholz) is the following: determine the dimension of the $\overline{\mathbb{Q}}$-vectorspace generated by a (finite) set of complex numbers. For example, the $\overline{\mathbb{Q}}$-vectorspace $\langle 1, \pi \rangle_{\overline{\mathbb{Q}}}$ is two-dimensional since π is transcendental by Lindemanns Theorem.

For certain complex numbers called *periods*, we will try to explain how this question can (sometimes) be translated into counting (equivalence classes of) paths in directed graphs. The dimension formulas obtained in this way improve and clarify earlier results of Huber & Wüstholz and recover a dimension estimate of Deligne & Goncharov.

This is based on joint work with Annette Huber (Freiburg).

Der Vortrag findet im Sitzungssaal 8.122 der Fakultät Mathematik und Physik, Pfaffenwaldring 57, 70569 Stuttgart-Vaihingen statt.

Interessenten sind herzlich eingeladen!

Die Dozentinnen und Dozenten des Fachbereichs Mathematik