Bernoullis Tafelrunde

Math Students and PhD Seminar

Monday, 14 April 2025, 12:15 - 13:00
Seminar Room 05.002, Spiegelgasse 5

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Chasing Transcendental Numbers through Continued Fractions

Abstract

The existence of transcendental numbers was probably first conjectured by Euler in the 18th century, but it was Liouville who, in 1844, provided the first explicit example of such numbers. Since then, brilliant mathematicians have developed numerous methods either to establish the transcendence of famous mathematical constants, most notably π and e, or to construct new transcendental numbers from scratch. In particular, continued fractions have emerged as a powerful tool for this latter purpose.

In this talk, after recalling some fascinating properties of continued fractions and their deep connections to Diophantine Approximation, we will highlight how they have been used to construct explicit examples of transcendental numbers. Time permitting, we will also touch upon recent advances in the generalization of these techniques to multidimensional continued fractions. Such results are a joint work with Nadir Murru and Giuliano Romeo.