FIM-Kolloquium

Am Mittwoch, den 27. Mai 2026 um 17:00 hält

Herr Ph.D. Radek Honzik

(Charles University Prag, Tschechien)

einen Vortrag über das Thema

Higher-order compactness in mathematics

Ort: (IM) HS 11, Innstraße 33, Universität Passau

Abstract: In this talk, we will survey several well-known compactness principles that generalize first-order compactness. These principles postulate that if all "substructures" of a given uncountable structure possess a certain higher-order property, then the entire structure must also possess this property. We will focus on classical mathematical structures, such as abelian groups (specifically, whether or not they are free) and graphs (examining whether their chromatic number depends solely on the chromatic numbers of their small subgraphs). Furthermore, we will discuss the assumptions under which these principles are consistent, and for which cardinalities.

In the second part of the talk, we will explore the impact of these principles on classical problems in mathematics and present original results in this area. In particular, we will discuss Whitehead's Conjecture in abelian group theory; the Suslin Hypothesis (whether the separability of the reals may be weakened to the countable chain condition and still characterize the reals); and Baumgartner's Axiom (a generalization of Cantor's theorem - which states that all countable dense linearly ordered sets without least and greatest elements are isomorphic - to ω_1-dense subsets of the reals).