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HABILITATIONSVORTRAG

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**“INFINITE COMBINATORICS AND THEIR APPLICATIONS
TO SMALL SETS OF REALS”**

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Abstract:

A common observation throughout the 20th century made in a variety of contexts in real analysis and topology is that “countable” implies “small”. Examples of this include the Baire category theorem (countable unions of closed nowhere dense sets of reals cannot cover the real line), and the fact that countable sets have Lebesgue measure zero. Set theorists have devoted much time to trying to understand when “countable” can be replaced by sets of larger cardinality. These investigations have betrayed a deep connection between topology and analysis of the real line on one hand and combinatorics of infinite sets of natural numbers on the other. In this talk I will survey some of the background on these topics before turning to my own research on these subjects. I will show in particular how classical combinatorial objects such as trees, linear orders and various special families of infinite sets of real numbers can give surprising information about the topological and analytic properties of the real line.

**Freitag, 7. Juni 2024
15:00 Uhr bis 15:45 Uhr
SR 11, 2 OG.
Fakultät für Mathematik,
Oskar-Morgenstern-Platz 1**

**Henk Bruin
Radu Bot**