



## Kolloquium über Reine Mathematik

Einladung zu einem Vortrag

**Dienstag, 10. April 2018**

17 Uhr s.t., Geom H4

Dr. Yurii Khomskii  
(Habitationsvortrag)

### ***Definability and the Structure of the Real Line***

Abstract:

With the “Grundlagenkrise” at the start of the 20th century, mathematicians were faced with numerous unsolvable problems concerning foundational concepts such as the real number continuum. Many of these problems have later turned out to be independent of the Zermelo-Fraenkel axiom system ZFC, i.e., they could neither be proved nor refuted on the basis of these axioms and the inference rules of logic. One particularly interesting example concerns the relationship between topological properties of sets of reals on one hand (e.g., being Lebesgue-measurable), and their logical complexity on the other hand, giving rise to a fruitful research area called “Descriptive Set Theory”.

Throughout the years, many interesting properties have come under the attention of Descriptive Set Theory, motivated by questions from analysis and topology as well as by internal set theoretic questions. This, in turn, has stimulated the development of sophisticated tools for constructing various “models of set theory”, in order to prove the independence from ZFC of various mathematical statements.

I will start this talk by giving a brief historical introduction, explaining why this line of research is fruitful and interesting, and then pick out a few specific results which I will talk about in more detail.

**Vor dem Vortrag (ab 16.30 Uhr) stehen im Raum 327 Kaffee und Tee bereit.**