

Welcome Home Workshop 2014

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TITOLO: Generalized Baire Spaces

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Abstract

The study of the Baire space ω^ω and Cantor space 2^ω has played a central role in many areas of mathematics. From the topological viewpoint, these spaces are very similar to the real line (indeed they are Borel isomorphic) and so they are interesting for investigating questions concerning measure and category of the real numbers. Moreover, from the viewpoint of mathematical logic ω^ω and 2^ω are important since countable structures can be coded as elements in these spaces. As a consequence, one can investigate some deep connections between descriptive set theory and model theory. However, it turns out that when studying κ -size structures, with κ uncountable, there is an even more strict connection with the descriptive set theory of κ^κ ; indeed, the complexity of the isomorphism relation of a theory T is strictly connected with its behaviour in stability theory. This is one of the strongest motivations to study the generalized Baire spaces κ^κ and 2^κ , even from the topological point of view. Though some results seem to trivially generalize (e.g., the Baire category theorem, Fubini theorem for category), one can soon realize that the differences are much more (and more interesting somehow) than the similarities. One of the main lacks is a suitable notion of measure. In my talk I will sketch some ideas for using forcing method in order to define an appropriate notion of “null set”. This is joint work with Sy Friedman.