KURT GÖDEL RESEARCH CENTER FOR MATHEMATICAL LOGIC

UNIVERSITÄT WIEN

1090 WIEN, WÄHRINGER STRASSE 25

O.UNIV.-PROF. DR. SY-DAVID FRIEDMAN

INVITATION

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SELECTED TOPICS FOR THE WEAK TOPOLOGY OF BANACH SPACES

Abstract:

Corson (1961) started a systematic study of certain topological properties of the weak topology w of Banach spaces E. This line of research provided more general classes such as reflexive Banach spaces, Weakly Compactly Generated Banach spaces and the class of weakly K-analytic and weakly K-countably determined Banach spaces. On the other hand, various topological properties generalizing metrizability have been studied intensively by topologists and analysts. Let us mention, for example, the first countability, Frechet-Urysohn property, sequentiality, k-space property, and countable tightness. Each property (apart the countable tightness) forces a Banach space E to be finite-dimensional, whenever E with the weak topology w is assumed to be a space of the above type. This is a simple consequence of a theorem of Schluchtermann and Wheeler that an infinite-dimensional Banach space is never a k-space in the weak topology. These results show also that the question when a Banach space endowed with the weak topology is homeomorphic to a certain fixed model space from the infinite-dimensional topology is very restrictive and motivated specialists to detect the above properties only for some natural classes of subsets of E, e.g., balls or bounded subsets of E. We collect some classical and recent results of this type, and characterize those Banach spaces E whose unit ball B_w is $k_{\mathbb{R}}$-space or even has the Ascoli property. Some basic concepts from probability theory and measure theoretic properties of the space ℓ_1 will be used.

THURSDAY, APRIL 21, 2016
Tea at 3:30pm in the KGRC meeting room (room 104)
Talk at 4:00pm in the KGRC lecture room (room 101)
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