On zero-dimensional subspaces of Eberlein compacta and a characterization of ω-Corson compacta

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Recall that a compact space K is Eberlein compact if it can be embedded into some Banach space X equipped with the weak topology. The first part of our talk will be devoted to the known problem of the existence of nonmetrizable compact spaces without nonmetrizable zero-dimensional closed subspaces. Several such spaces were obtained using some additional set-theoretic assumptions. Recently, P. Koszmider constructed the first such example in ZFC. We investigate this problem for the class of Eberlein compact spaces. We construct such Eberlein compacta, assuming the existence of a Luzin set. We also show that it is consistent with ZFC that each Eberlein compact space of weight greater than ω_1 contains a nonmetrizable closed zero-dimensional subspace.

A compact space K is ω-*Corson compact* if, for some set Γ, K is homeomorphic to a subset of the σ-product of real lines

$$\sigma(\mathbb{R}^\Gamma) = \{x \in \mathbb{R}^\Gamma : |\{\gamma : x(\gamma) \neq 0\}| < \omega\}.$$

Clearly, every ω-Corson compact space is Eberlein compact. We will present a characterization of ω-Corson compact spaces obtained jointly with Grzegorz Plebanek and Krzysztof Zakrzewski.

TOPOSYM

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