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West's Problem on Equivariant Hyperspaces and the Banach-Mazur Compacta

In 1976 J. E. West asked the following question: Let G be a compact connected Lie group. Whether the orbit space $(exp G)/G$ is an absolute retract, and if so, whether it is always homeomorphic to the Hilbert cube? Here, as usual, for a metrizable G -space X , $exp X$ denotes the hyperspace of all nonempty compact subsets of X endowed with the Hausdorff metric topology and with the induced action of G .

In this talk we shall present new results about equivariant hyperspaces that imply a positive solution to the first part of West's problem. Further, the relationship between West's problem above and Pelczyński's problem about the Banach-Mazur compacta $BM(n)$, $n \geq 2$, will be discussed. On this way we discover new properties of the Banach-Mazur compacta, for instance, we prove that the complement $BM_0(n)$ of the unique singular point in $BM(n)$ is a Hilbert cube manifold for every $n \geq 2$. This is applied to obtain new topological models for $BM(n)$. Other related results will also be discussed.

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