

The Bing-Borsuk and the Busemann Conjectures

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We shall give a survey of two classical conjectures concerning the characterization of manifolds: the Bing-Borsuk Conjecture asserts that every n -dimensional homogeneous ANR is a topological n -manifold, whereas the Busemann Conjecture asserts that every n -dimensional G-space is a topological n -manifold. The key objects in both cases are the so-called generalized manifolds, i.e. ENR homology manifolds. We shall look at the history, concentrating on those geometric properties of these spaces which are particular for dimensions 3 and 4, in comparison with generalized $(n \leq 4)$ -manifolds. We shall present the current state of the two conjectures and list the main open problems and related conjectures.