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Simplified Proofs of the $\mathbb{Z}/p$- and $\mathbb{Q}$-resolution Theorems

Abstract. The $\mathbb{Z}/p$-resolution and $\mathbb{Q}$-resolution theorems were proved respectively by A. Dranishnikov and M. Levin. For example, the $\mathbb{Z}/p$-resolution theorem of Dranishnikov states that if X is a metrizable compactum with $\dim_{\mathbb{Z}/p} X \leq n$, then there exists a compact metrizable space Z with $\dim Z \leq n$ and a surjective $\mathbb{Z}/p$-acyclic map $\pi : Z \to X$. For Levin's theorem, just replace $\mathbb{Z}/p$ by $\mathbb{Q}$. We will explain the unfamiliar terms in our presentation.

In both proofs, an inverse sequence of compact polyhedra was used to represent the given space X. On each of the polyhedra a certain extension, depending on the group, was built in a complicated manner. We are going to discuss a technique for proving both theorems that can obviate these complicated extensions, replacing them with simple extensions in exchange for a minor step-by-step "point-set" adjustment of the inverse sequence.