HILBERT CUBE MANIFOLDS

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1. **Introduction.** It is the purpose of this note to announce some new results concerning *Hilbert cube manifolds* (or *Q-manifolds*), i.e. separable metric spaces which have open covers by sets homeomorphic to open subsets of the Hilbert cube, I^∞. Their proofs will appear in a longer paper that is in preparation [5].

These results parallel a number of embedding, characterization, and homeomorphism theorems that have been established recently for paracompact manifolds modeled on various infinite-dimensional linear spaces (see [4] for a partial summary and [6], [8] for more recent generalizations).

In obtaining these Q-manifold results the linear space apparatus used in some of the corresponding results of [4], [6], and [8] could not be used. Thus in most cases new techniques had to be devised. We list these results below along with some of the principal results on Q-manifolds that have been established elsewhere. We also list a number of open questions.

2. **Definitions and notation.** We represent I^∞ as the countable infinite product of closed intervals $[-1, 1]$ and we let $0=(0, 0, \cdots)$ $\in I^\infty$.

Following Anderson [1] we say that a closed subset K of a topological space X has *Property* Z in X provided that for each nonnull and homotopically trivial (i.e. all homotopy groups are trivial) open subset U of X, $U\backslash K$ is nonnull and homotopically trivial. We also call K a *Z-set*.

Let X and Y be topological spaces and let $\mathcal{U}$ be an open cover of Y. Then functions $f, g: X\to Y$ are said to be $\mathcal{U}$-*close* provided that for each $x\in X$, $f(x)$ and $g(x)$ lie in some element of $\mathcal{U}$. A function $h: Y\to Y$ is said to be *limited by* $\mathcal{U}$ provided that for each $y\in Y$, y and $h(y)$ lie in some element of $\mathcal{U}$. A function $H: X\times[0, 1]\to Y$ is also said to be limited by $\mathcal{U}$ provided that for each $x\in X$, $H(\{x\}\times[0, 1])$ lies in some element of $\mathcal{U}$. By $\mathrm{St}^n(\mathcal{U})$ we mean the nth star of the cover $\mathcal{U}$, defined in the usual manner.

An isotopy $F: X\times[0, 1]\to Y$ is said to be an *invertible ambient*

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