FOUR CLASSES OF SEPARABLE METRIC INFINITE-DIMENSIONAL MANIFOLDS[1]

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Communicated by R. D. Anderson, October 6, 1969

1. **Introduction.** The purpose of this note is to announce some new embedding, homeomorphism, and characterization theorems regarding certain infinite-dimensional manifolds. We list these theorems below along with some of the principal known results in this area. It is expected that these new results will constitute a portion of the author's dissertation and their proofs will appear in a longer paper that is in preparation.

2. **Definitions and notation.** Each infinite-dimensional separable Fréchet space (and therefore each infinite-dimensional separable Banach space) is homeomorphic to s, the countable infinite product of open intervals $(-1, 1)$ (see [**3**]). A *Fréchet manifold* (or *F-manifold*) is a separable metric manifold modeled on s. A *Hilbert cube manifold* (or *Q-manifold*) is a separable metric manifold modeled on the Hilbert cube I^∞, which we represent as the countable infinite product of closed intervals $[-1, 1]$.

Let σ be the set consisting of all points in s having at most finitely many nonzero coordinates and define a *σ-manifold* to be a separable metric manifold modeled on σ. Let Σ be the set consisting of all points in s having at most finitely many coordinates not in $[-\frac{1}{2}, \frac{1}{2}]$ and define a *Σ-manifold* to be a separable metric manifold modeled on Σ.

A subset K of a space X is a *Z-set in X* if K is closed and if for every nonnull homotopically trivial open set U in X, $U\backslash K$ is nonnull and homotopically trivial.

A subset M of a metric space X is said to have the *(finite-dimensional) compact absorption property* (or *$(f-d)$* cap) *in X* provided that

(1) $M=\bigcup_{n=1}^{\infty} M_n$, where M_n is a (finite-dimensional) compact Z-set in X, and

AMS Subject Classifications. Primary 5755; Secondary 5705, 5701.

Key Words and Phrases. Fréchet manifolds, Hilbert cube manifolds, Property Z, (finite-dimensional) compact absorption property, infinite deficiency.

[1] This article was presented to the Society January 24, 1970.

The research was conducted while the author held a NASA traineeship.