

ROBERT J. DAVERMAN

(University of Tennessee)

Characterizing Manifolds Topologically

By definition, an n -manifold is a metric space in which each point has a neighborhood topologically equivalent to Euclidean n -space. Although a simple definition, it does not always readily apply to objects that arise from mathematical constructions, because it is not necessarily easy to recognize Euclidean n -space. There are straightforward, classical characterizations of the Euclidean plane and of 2-manifolds, and there are more subtle characterizations of the analogues in dimensions greater than 4. This talk will review the history behind those characterizations, involving work of Edwards and Quinn from about 25 years ago, and will mention the exotic examples of Bryant, Ferry, Mio and Weinberger from the early 1990s which show the need for the subtleties. It also will treat the related issues in dimensions 3 and 4, where there is still work to be done.