RECENT CLASSIFICATION
AND CHARACTERIZATION RESULTS
IN GEOMETRIC TOPOLOGY

J. J. DIJKSTRA, T. DOBROWOLSKI, W. MARCISZEWSKI,
J. VAN MILL, AND J. MOGILSKI

ABSTRACT. We announce a complete topological classification
of the function spaces $C_p(X)$ of Borel class not higher than
2, provided that X is a countable space. We also present a
topological classification of the k-dimensional universal pseu-
doboundaries and pseudointeriors in $\mathbf{R}^n$, and we investigate
under what conditions strong negligibility of σZ-sets charac-
terizes Hilbert space manifolds.

1. INTRODUCTION

The work presented in this announcement traces its history back
to Fréchet [18] and Banach [6] who proposed to classify metric
linear spaces according to topological type. For complete spaces
this program was carried out by Anderson [1], Kadec [21], and
Toruńczyk [25]: A Fréchet space is characterized topologically by
its linear dimension (i.e., minimal cardinality of sets with a dense
span). The classification of incomplete linear spaces, however, is
still in the beginning stage. In the case that the space is a so-called
absorber (see §2) characterizations have been developed (Mogilski
[24] and Bestvina and Mogilski [8]). We apply these results to
the classification of certain function spaces. If X is a space, then
$C_p(X)$ denotes the space of continuous, real valued functions on
X endowed with the topology of pointwise convergence. This
function space is metrizable only if X is a countable space (barring
spaces without point separating real valued functions). Therefore
we consider countable completely regular spaces X that are for
obvious reasons also nondiscrete. We show that all $F_{\sigma\delta}$-spaces