We are all greatly indebted to Professor Carolyn Eisele for bringing together the most important of Peirce's unpublished manuscripts on mathematics; for her discriminating selection from a vast amount of material; and for her extensive historical researches, the results of which she has presented in the introduction.

ARTHUR W. BURKS


Supercompactness spaces are compact spaces characterized by having a binary subbase. That is, there is a subbase \( S \) for the closed sets with the property that if \( \mathcal{L} \subset S \) and \( \bigcap S \neq \emptyset \) then there are two sets \( L_0, L_1 \in \mathcal{L} \) such that \( L_0 \cap L_1 = \emptyset \). The main goal of this monograph is to study supercompact spaces and supercompact extensions of arbitrary topological spaces.

Supercompact spaces were first defined by J. DeGroot in 1967 and arose from investigations on complete regularity and compactification theory. A number of mathematicians became interested in DeGroot's work and many of his conjectures have now been proved, new techniques have been developed, and new questions have arisen. This book presents known and new results in a structured form with sufficient auxiliary and background material to make the subject accessible to a reader with a solid course in graduate level general topology. The main appeal of the book however will be for those who have an interest in pursuing research in this area.

In the first chapter, supercompact spaces are studied in general. Topics included are: Hausdorff continuous images of supercompact Hausdorff spaces, the notion of an interval structure and its use in characterizing supercompactness, the relation between graphs and supercompact spaces, regular supercompact spaces (those possessing a binary base which generates a ring of regular closed sets), and partial orderings on supercompact spaces. DeGroot conjectured that every compact metric space is supercompact and that not every compact Hausdorff space is supercompact. Although these conjectures have been proven true, there are still many open questions and several are explicitly mentioned.

Using the notion of maximal linked systems, supercompact extensions of topological spaces are obtained in a manner analogous to the construction of Wallman-type compactifications. In Chapter II, properties of superextensions (and their subspaces) are studied: those they inherit from the underlying space, and those which are new and unexpected. The contractibility of superextensions is also investigated.

Metrizable superextensions are studied in Chapter III, with particular emphasis on infinite dimensional problems, such as: is the superextension of the closed unit interval homeomorphic to the Hilbert cube? (An affirmative answer is given.)

The subject of Chapter IV reflects the second part of the book's title and relates only incidentally to supercompact spaces. Two questions are
considered: Is every Hausdorff compactification of a Tychonoff space (a) a Wallman-type compactification? (b) a GA compactification (defined by DeGroot and Arts)? Since every Wallman-type compactification is a GA compactification, the questions are related. In a footnote the author mentions that (a) has supposedly been answered in the negative by Uljanov and Shapiro. Conditions are given for a superextension to be a regular supercompact space, and hence a superextension of each dense subspace.

The final chapter presents a summary of recent results on supercompact spaces which answer some of the questions posed in earlier chapters.

The monograph concludes with an extensive bibliography and an author reference index as well as a subject index. For the topologist interested in extension theory, this book provides a good insight into current research in the area of supercompactness. The author has done an excellent job of bringing together diverse results which all contribute to the general theory of supercompactness, and should be extremely valuable to anyone contemplating research in this area.

Anne K. Steiner