

Inverse limits

From continua to chaos

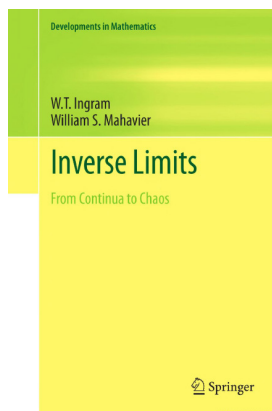
Ingram, W. T. Mahavier, William S. Springer, New York, 2012. 217 pp.

Mardešić, Sibe

Inverse limits have been used in topology and other areas of mathematics since the 1920s and 1930s. They allow elegant descriptions of complicated spaces and are especially useful in the theory of continua and in dynamical systems. Many textbooks and monographs on topology contain sections on inverse limits. However, the only book devoted entirely to inverse limits is the book *An introduction to inverse limits with set-valued functions* by the first author. The present book can be viewed as a substantial extension of that book and is a welcome enrichment of the literature.

The first of the four chapters is devoted to inverse limits on the unit interval $I=[0,1]$, reflecting the authors' opinion that the best way to learn about inverse limits is to study limits on I . This chapter contains proofs of many basic theorems, discovered during the 1950s and 1960s by a number of topologists. Numerous examples as well as an Appendix on the Hilbert cube make the material accessible to senior-level undergraduate and beginning-level graduate students.

Chapter 2 is of a more general nature. The authors consider inverse systems of compact Hausdorff spaces, indexed by directed sets. The



bonding mappings are allowed to be multi-valued. Inverse systems with multi-valued bonding mappings were introduced only in 2004 in a paper of the second author.

Chapter 3 is devoted to applications in the theory of continua. In particular, the authors study the interaction of inverse limits with fundamental properties of continua theory like indecomposability, atriodicity, unicoherence, irreducibility, etc.

The last chapter is devoted to the famous theorem of Morton Brown, that sufficiently small alterations of the bonding mappings do not affect the limit of an inverse sequence of metric compacta.

The book closes with a long list consisting of 591 references. In spite of the subtitle of the book, *From continua to chaos*, chaos is barely mentioned and does not appear either in the Contents or in the Index.

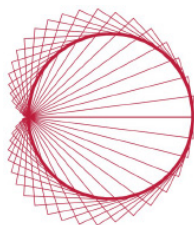
La versión completa de la reseña se encuentra en la página:
<https://mathscinet.ams.org/mathscinet/article?mr=3014043>



Mathematics or literature?

... all my life I could not decide to what I am inclined more -to mathematics or literature? Just as my head becomes tired from pure abstract speculation, I immediately start to draw on observations on life, on stories; conversely, sometimes life itself suddenly begins to seem trivial and uninteresting, and then only the eternal, immutable laws attract me. It may well be that in each of these areas, I could have done more if I had been committed to it alone; nevertheless, I cannot give up either of them completely.

Sofia Kovalevskaya



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