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Nota di contenuto	1. Introduction -- 1.1. A Brief History of Space-Filling Curves -- 1.2. Notation -- 1.3. Definitions and Netto's Theorem -- 1.4. Problems -- 2. Hilbert's Space-Filling Curve -- 2.1. Generation of Hilbert's Space-Filling Curve -- 2.2. Nowhere Differentiability of the Hilbert Curve -- 2.3. A Complex Representation of the Hilbert Curve -- 2.4. Arithmetization of the Hilbert Curve -- 2.5. An Analytic Proof of the Nowhere Differentiability of the Hilbert Curve -- 2.6. Approximating Polygons for the Hilbert Curve -- 2.7. Moore's Version of the Hilbert Curve -- 2.8. A Three-Dimensional Hilbert Curve -- 2.9. Problems -- 3. Peano's Space-Filling Curve -- 3.1. Definition of Peano's Space-Filling Curve -- 3.2. Nowhere Differentiability of the Peano Curve -- 3.3. Geometric Generation of the Peano Curve -- 3.4. Proof that the Peano Curve and the Geometric Peano Curve are the Same -- 3.5. Cesaro's Representation of the Peano Curve -- 3.6. Approximating Polygons for the Peano Curve -- 3.7. Wunderlich's Versions of the Peano Curve -- 3.8. A Three-Dimensional Peano Curve -- 3.9. Problems -- 4. Sierpi?ski's Space-Filling Curve -- 4.1. Sierpi?ski's Original Definition -- 4.2. Geometric Generation and Knopp's Representation of the Sierpi?ski Curve -- 4.3. Representation of the Sierphiski-Knopp Curve in Terms of Quaternaries -- 4.4. Nowhere

Sommario/riassunto

The subject of space-filling curves has fascinated mathematicians for over a century and has intrigued many generations of students of mathematics. Working in this area is like skating on the edge of reason. Unfortunately, no comprehensive treatment has ever been attempted other than the gallant effort by W. Sierpiriski in 1912. At that time, the subject was still in its infancy and the most interesting and perplexing results were still to come. Besides, Sierpiriski's paper was written in Polish and published in a journal that is not readily accessible (Sierpiriski [2]). Most of the early literature on the subject is in French, German, and Polish, providing an additional raison d'etre for a comprehensive treatment in English. While there was, understandably, some intensive research activity on this subject around the turn of the century, contributions have, nevertheless, continued up to the present and there is no end in sight, indicating that the subject is still very much alive. The recent interest in fractals has refocused interest on space- filling curves, and the study of fractals has thrown some new light on this small but venerable part of mathematics. This monograph is neither a textbook nor an encyclopedic treatment of the subject nor a historical account, but it is a little of each. While it may lend structure to a seminar or pro-seminar, or be useful as a supplement in a course on topology or mathematical analysis, it is primarily intended for self-study by the aficionados of classical analysis.