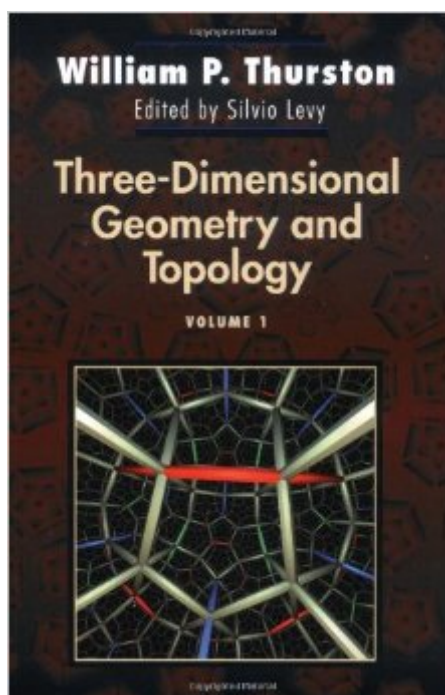The book was found

Three-Dimensional Geometry And Topology, Vol. 1

Synopsis

This book develops some of the extraordinary richness, beauty, and power of geometry in two and three dimensions, and the strong connection of geometry with topology. Hyperbolic geometry is the star. A strong effort has been made to convey not just denatured formal reasoning (definitions, theorems, and proofs), but a living feeling for the subject. There are many figures, examples, and exercises of varying difficulty.This book was the origin of a grand scheme developed by Thurston that is now coming to fruition. In the 1920s and 1930s the mathematics of two-dimensional spaces was formalized. It was Thurston's goal to do the same for three-dimensional spaces. To do this, he had to establish the strong connection of geometry to topology--the study of qualitative questions about geometrical structures. The author created a new set of concepts, and the expression "Thurston-type geometry" has become a commonplace.Three-Dimensional Geometry and Topology had its origins in the form of notes for a graduate course the author taught at Princeton University between 1978 and 1980. Thurston shared his notes, duplicating and sending them to whoever requested them. Eventually, the mailing list grew to more than one thousand names. The book is the culmination of two decades of research and has become the most important and influential text in the field. Its content also provided the methods needed to solve one of mathematics' oldest unsolved problems--the Poincaré Conjecture.In 2005 Thurston won the first AMS Book Prize, for Three-dimensional Geometry and Topology. The prize recognizes an outstanding research book that makes a seminal contribution to the research literature. Thurston received the Fields Medal, the mathematical equivalent of the Nobel Prize, in 1982 for the depth and originality of his contributions to mathematics. In 1979 he was awarded the Alan T. Waterman Award, which recognizes an outstanding young researcher in any field of science or engineering supported by the National Science Foundation.

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Customer Reviews

A must for anyone entering the field of three-dimensional topology and geometry. Most of it is about hyperbolic geometry, which is the biggest area of research in 3-d geometry and topology nowdays.Most of it is readable to undergraduates. Its target audience, though, is beginning graduate students in mathematics. If not already familiar with hyperbolic geometry, you might want to get an introduction to the subject first. Once with this background, though, you will discover there is another level of understanding of hyperbolic space you never realized was possible. One imagines Thurston able to skateboard around hyperbolic space with the kind of geometric understanding he conveys here.What made Thurston so famous and successful as a pioneer in 3-d topology and geometry was his other-worldly geometric intuition. This book takes the reader along the first step of the 10000 miles of getting to that intuition.

This book was an instant classic, and for good reason: It conveys many profound insights into geometry and topology discovered by one of the greatest mathematicians of all time -- William P. Thurston.If you read this book, know that the more actively you read this, the more you will get out of it. Book is full of exercises for the reader that will greatly enhance your understanding of the material.

Stanislaw Ulam once compared learning mathematics to learning a language, in that some people learn mathematics by "grammar" while other learn it by ear. Thurston's book is a bit like learning by ear.

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