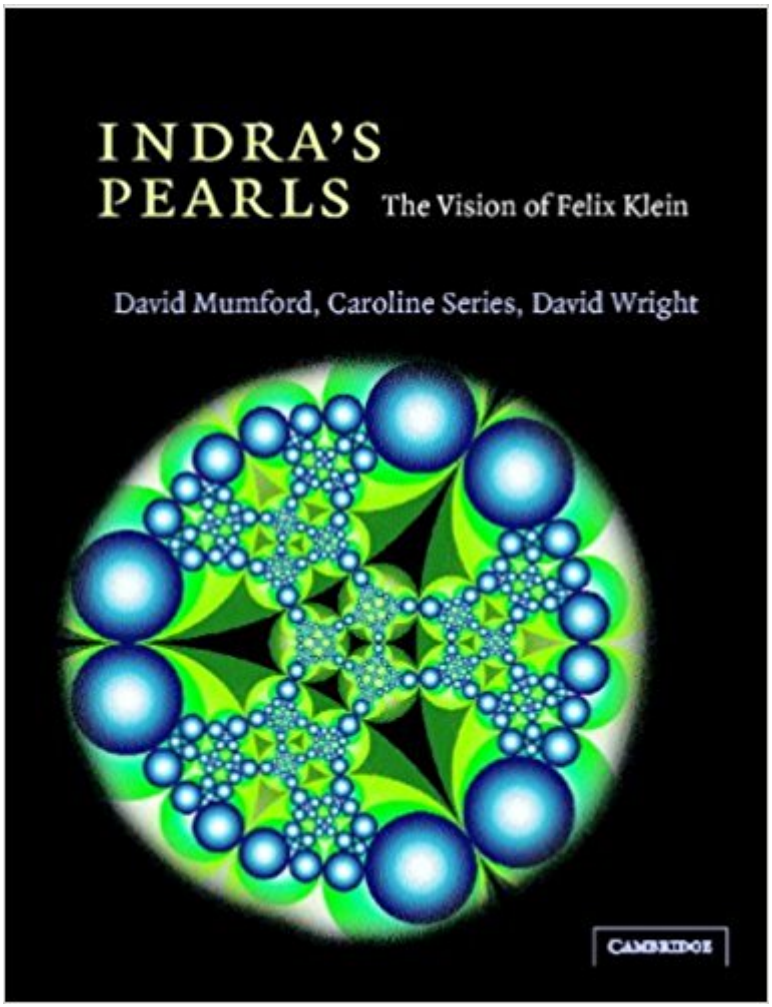
Indra's Pearls: The Vision Of Felix Klein



Synopsis

Felix Klein, one of the great nineteenth-century geometers, rediscovered in mathematics an idea from Eastern philosophy: the heaven of Indra contained a net of pearls, each of which was reflected in its neighbour, so that the whole Universe was mirrored in each pearl. Klein studied infinitely repeated reflections and was led to forms with multiple co-existing symmetries. For a century these ideas barely existed outside the imagination of mathematicians. However in the 1980s the authors embarked on the first computer exploration of Klein's vision, and in doing so found many further extraordinary images. Join the authors on the path from basic mathematical ideas to the simple algorithms that create the delicate fractal filigrees, most of which have never appeared in print before. Beginners can follow the step-by-step instructions for writing programs that generate the images. Others can see how the images relate to ideas at the forefront of research.

Book Information

File Size: 67224 KB

Print Length: 418 pages

Simultaneous Device Usage: Up to 4 simultaneous devices, per publisher limits

Publisher: Cambridge University Press; 1 edition (April 25, 2002)

Publication Date: April 25, 2002

Sold by:Ã Â Digital Services LLC

Language: English

ASIN: B00IE6MP7S

Text-to-Speech: Enabled

X-Ray for Textbooks: Enabled

Word Wise: Not Enabled

Lending: Not Enabled

Screen Reader: Supported

Enhanced Typesetting: Enabled

Best Sellers Rank: #570,986 Paid in Kindle Store (See Top 100 Paid in Kindle Store) #17 inÃ Â Kindle Store > Kindle eBooks > Nonfiction > Science > Mathematics > Pure Mathematics > Group Theory #28 inÃ Â Kindle Store > Kindle eBooks > Nonfiction > Science > Mathematics > Geometry & Topology > Topology #39 inÃ Â Kindle Store > Kindle eBooks > Nonfiction > Science > Mathematics > Pure Mathematics > Discrete Mathematics

Customer Reviews

This is my first reading of this book. This is a book you can come back to. My first pass was to look through the beautiful images. I have somewhat superficially read the text. The book is well written. It has multiple levels and components. It is partitioned in a stepwise manner to proceed from Mobius transformations from circles to circles , then consideration iterated pair of Mobius transformation of disjoint circle pairs, then "kissing pairs" then more generalized approaches. The important properties (conformal orientation preserving mappings) are discussed. The classifications are explained and the relation of these properties to the dynamic (iterated) behaviour is discussed. This book fits well with Visual Complex Analysis.I found the later chapters difficult and hope to come back to them in the future when I have the happy confluence of time, mood and more education.Central to the book is the concept of the group and particular subgroups. Fractals, chaos, and other concepts from dynamical systems emerge from this book in a beautiful way. There are also historical vignettes of the key figures in the development of the subject.The pseudocode is well explained in words, then algorithm. I have only just started to play with this. On a second and subsequent readings I hope to work through the projects that the authors provide.This seems to have been a long labour of love for the three authors and their collaborators. My first read was a pleasure and motivator to learn more.

Extremely interesting and lucid discussions of new developments in an area of math, with lovely illustrations. The book is reader friendly with a sense of the people who are developing new and powerful ideas in recursive algorithms. The book can be read at many levels, from the casual reader to the research mathematician. These algorithms are underlying keys to graphics creations in computing. The book is highly enjoyable.

This a fantastic book, weel write. The exposition is simple and elegant.

I have as contrast several books dealing with closely related material.My own approach using Iterated Function Systems isn’t actually the same asthe Limit set approach, yet sometime the results come out very similar.For comparison the graphics in :The Arithmetic of Hyperbolic 3-Manifolds (Graduate Texts in Mathematics)are very minimal and the presentation of the Mathematics makes no effort to be understandableto ordinary people.Another example is:Foundations of Hyperbolic Manifolds (Graduate Texts in Mathematics)which has some very awesome mathematics, but again has minimal graphicsand makes very little effort at really teaching the subject in an understandable manner.Don’t get me wrong, the Limit set Klein group approach in Indra’s Pearl’sisn’t easy, but for a

very difficult subject the authors really try tomake the subject approachable to most anyone.For me the Klein group approach to geometry has been an eye opener,that put TeichmÃƒÂ ller space into my mind alongside Reimannian conformal geometryand the quantum mechanical groups of physics. I think future generations of studentswill bless these authors for this representation.

[this review shall replace the already existing one]Indras pearls provides a very well-made introduction to the basics of the theory of discrete groups acting on the complex plane. The whole discussion on the related limit sets had been accomplished in such a hand-by-hand method.The reader starts from complex numbers and after he is led into the deepest concepts: MÃƒÂ¶bius trasformations, limit sets of discrete groups (Schottky, Fuchsian, ...).These limit sets are related to another interesting topic in today maths: complex dynamics on the Riemann sphere (Julia sets, ...).As known, computer experiments had been fundamental for supporting complex dynamics and the successive success of this latter topic helped to promote and increase the interests for discrete groups too: in fact this book evinces already strong interest in the visualization and in the study of the properties of such limit sets since ’80s, due to the efforts of the same authors.One of the major points of attraction in Indra pearls is that all the theory had been helped by displaying a lot of detailed and colorful pictures which, aside the historical biography of the mathematicians that contributed to this theory, set this book as one of the masterpieces in this topic, for his lucidand fresh approach to basic concepts.In addition, the presence of amusing comic-strips, explaining some topological concepts on manifolds (for example), guarantees the easy-learning for the reader and also the approach, as imaginaed and completely accomplished by the authors. In this direction, it is clear how passion had been squandered by authors.The goal has been reached: finding an easy way to introduce the harsch theory of discrete groups.Interested readers will be rewarded and also excited.No doubts: this book strikes and it will be a corner-stone for present and future.

Anesthesiology Board Review Pearls of Wisdom 3/E (Pearls of Wisdom Medicine) Eye Exercises to Improve Vision: Recover Your Vision Naturally with Simple Exercises (Vision Training) Hua-Yen Buddhism: The Jewel Net of Indra (Iaswr Series) In a World of Gods and Goddesses: The Mystic Art of Indra Sharma Indra's Net: Alchemy and Chaos Theory as Models for Transformation Eyesight Improvement: The Ultimate Guide How To Improve and Cure your Eyesight and Vision Naturally (Eyesight Improvement, Vision Improvement, Eyesight Cure, Health Restoration, Natural Cures) Handbook of Optics, Third Edition Volume III: Vision and Vision Optics(set) The Eyesight Improvement Cure: How To Improve Your Vision Naturally Without Glasses, Lenses Or Surgery (eyesight, eyesight improvement, eyesight improvement ... naturally, how to improve your vision) Felix Gonzalez-Torres: Specific Objects Without Specific Form Mendelssohn, Felix - String Quartet in f minor, Op. post. 80 - Two Violins, Viola, and Cello