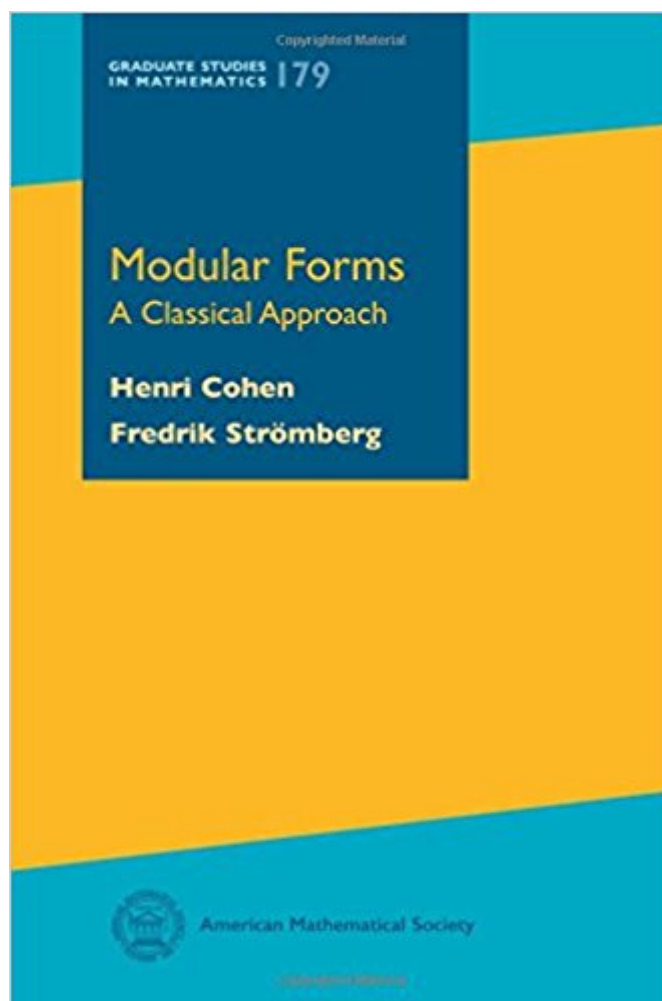The book was found

Modular Forms: A Classical Approach (Graduate Studies In Mathematics)

Synopsis

The theory of modular forms is a fundamental tool used in many areas of mathematics and physics. It is also a very concrete and ``fun'' subject in itself and abounds with an amazing number of surprising identities.This comprehensive textbook, which includes numerous exercises, aims to give a complete picture of the classical aspects of the subject, with an emphasis on explicit formulas. After a number of motivating examples such as elliptic functions and theta functions, the modular group, its subgroups, and general aspects of holomorphic and nonholomorphic modular forms are explained, with an emphasis on explicit examples. The heart of the book is the classical theory developed by Hecke and continued up to the Atkin-Lehner-Li theory of newforms and including the theory of Eisenstein series, Rankin-Selberg theory, and a more general theory of theta series including the Weil representation. The final chapter explores in some detail more general types of modular forms such as half-integral weight, Hilbert, Jacobi, Maass, and Siegel modular forms.Some ``gems'' of the book are an immediately implementable trace formula for Hecke operators, generalizations of Haberland's formulas for the computation of Petersson inner products, W. Li's little-known theorem on the diagonalization of the full space of modular forms, and explicit algorithms due to the second author for computing Maass forms.This book is essentially self-contained; the necessary tools such as gamma and Bessel functions, Bernoulli numbers, and so on are given in a separate chapter.

Book Information

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Customer Reviews

This book gives a beautiful introduction to the theory of modular forms, with a delicate balance of analytic and arithmetic perspectives. Cohen and StrÃƒÂ¶mberg start with a foundational collection of tools in analysis and number theory, which they use while guiding the reader through a vast landscape of results. They finish by showing us the frontiers of modern research, covering topics generalizing the classical theory in a variety of directions. Throughout, the authors expertly weave fine details with broad perspective. The target readership for this text is graduate students in number theory, though it will also be accessible to advanced undergraduates and will, no doubt, serve as a valuable reference for researchers for years to come. --Jennifer Balakrishnan, Boston UniversityThis marvelous book is a gift to the mathematical community and more specifically to anyone wanting to learn modular forms. The authors take a classical view of the material offering extremely helpful explanations in a generous conversational manner and covering such an impressive range of this beautiful, deep, and important subject. --Barry Mazur, Harvard UniversityThis book is an almost encyclopedic textbook on modular forms. There are already numerous and some excellent books on the subject. But none of the existing books by themselves contain this much and this detailed information. The authors' knowledge of the subject matter and the experience in writing books are clearly reflected in the end product. I would not only be very happy to use this book as a textbook next time I teach a course on modular forms, but I am also looking forward to having a hard copy in my library as an extensive reference book. --Imamoglu ÃƒÂâ€œzlem, ETH Zurich

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