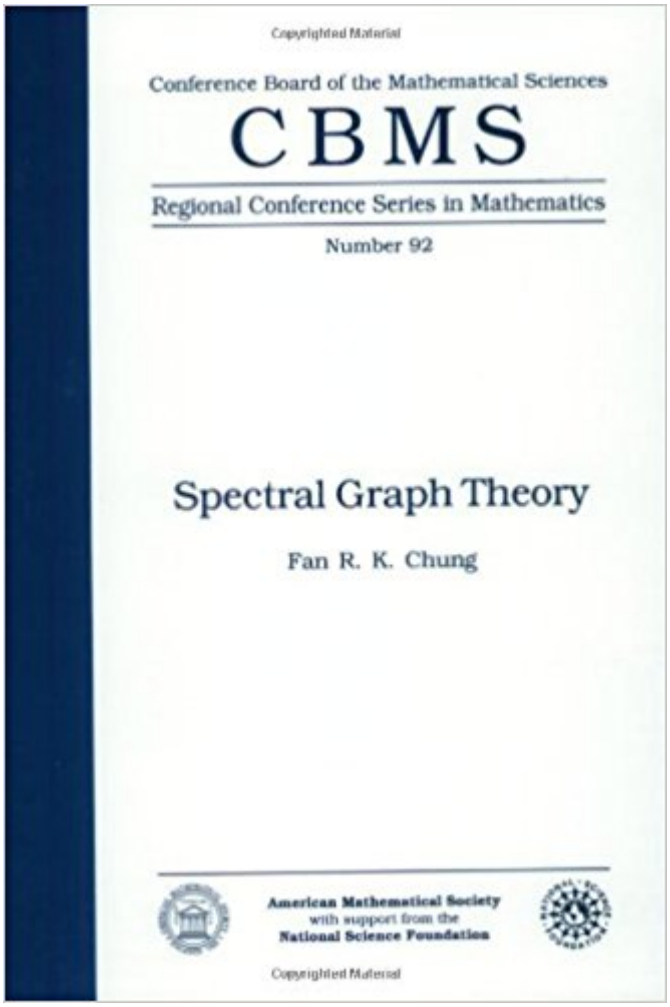
Spectral Graph Theory (CBMS Regional Conference Series In Mathematics, No. 92)



Synopsis

Beautifully written and elegantly presented, this book is based on 10 lectures given at the CBMS workshop on spectral graph theory in June 1994 at Fresno State University. Chung's well-written exposition can be likened to a conversation with a good teacher--one who not only gives you the facts, but tells you what is really going on, why it is worth doing, and how it is related to familiar ideas in other areas. The monograph is accessible to the nonexpert who is interested in reading about this evolving area of mathematics.

Book Information

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Customer Reviews

The book presents a very complete picture of how various properties of a graph--from Cheeger constants and diameters to more recent developments such as log-Sobolev constants and Harnack inequalities--are related to the spectrum. Even though the point of view of the book is quite geometric, the methods and exposition are purely graph-theoretic. As a result, the book is quite accessible to a reader who does not have any background in geometry. As the author writes, `the underlying mathematics of spectral graph theory through all its connections to the pure and applied, the continuous and discrete, can be viewed as a single unified subject.' Anyone who finds this sentence appealing is encouraged to give this book a try. He or she will not be disappointed. ---- Mathematical ReviewsIncorporates a great deal of recent work, much of it due to the author herself ... clear, without being pedantic, and challenging, without being obscure. ---- Bulletin of the London

Mathematical Society

I’ve used this book extensively in my own research. For me, as some one who researches more in geometry & topology, the main value of this book lies in it’s treatment of heat kernels on a graph and the duality with heat kernels of Riemannian manifolds (Chapter 10 of the book).The book itself can be kind of dense in the material it presents, but never overwhelmingly so. Dr. Chung is an expert in the field and you’re probably not going to find a better book than this if you’re looking to get into the concepts of the field of spectral graph theory.

But it will help people to understand a few things about SGT.It has a few mistakes - typos and it is lacking some crucial proofs.The bibliography is a little bit off and its not always accurate.But it gives you a lot of information concentrated in a few chapters that can help you save time from looking for it.

I found some very good stuff in this book.It is buried deep though.Again Fan Chung writes a book on graph theory withjust about no simple examples or graphs at all.The Cheeger constant and, both the volume and diameter measuresare not presented in an accessible way: just no real way tocalculate them is given.What is important seems to be what isn’t mentioned anywhere:the Cartan, Dykin and Coxeter approach to graphs and large scale symmetry.The treatment of the buckyball is the one concrete example andthe results instead of being explain are just givenwithout sufficient explanation.I have also to review Fan Chung’s 2006 lecture with Linyaun LuÂ Complex Graphs and Networks (Cbms Regional Conference Series in Mathematics)Â which appears to be a little better written.Some one seem to have told Fan Chung that proofs with less an or equal to are O. K.: they are in most cases a bad mistake in a book such as this for graduate students.

This book is intended for the professional mathematician that want to learn about the misteries of the eigenspectrum of the graph laplacian.A lot of misteries, a lot of fun.

This book is elegant and accessible, with a coherent presentation, but is a bit dry and unmotivated. The book would benefit from more applications, which should not be hard to find. I felt like Chapter 8 was the high point of the book, with a discussion of random walks, a matrix-tree theorem and invariant field theory.The researcher who needs an arsenal of technical results in a clear style will find it here; the student who desires some added perspective may come away somewhat

dissatisfied.

Though a bit terse at times, this is an excellent introduction to spectral theory.

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