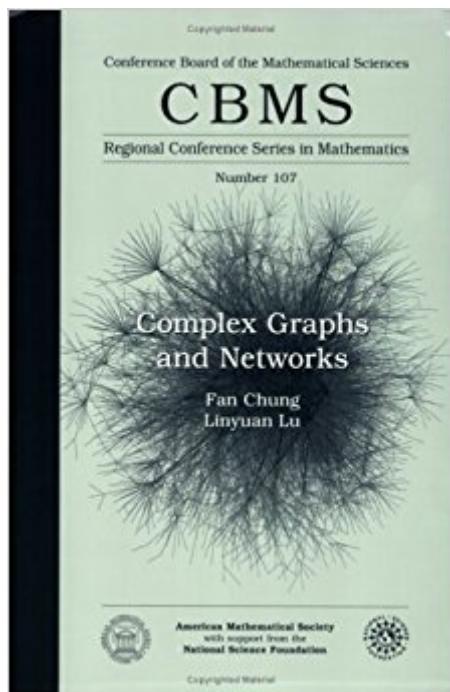


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Complex Graphs And Networks (CBMS Regional Conference Series In Mathematics)



Synopsis

Through examples of large complex graphs in realistic networks, research in graph theory has been forging ahead into exciting new directions. Graph theory has emerged as a primary tool for detecting numerous hidden structures in various information networks, including Internet graphs, social networks, biological networks, or, more generally, any graph representing relations in massive data sets. How will we explain from first principles the universal and ubiquitous coherence in the structure of these realistic but complex networks? In order to analyze these large sparse graphs, we use combinatorial, probabilistic, and spectral methods, as well as new and improved tools to analyze these networks. The examples of these networks have led us to focus on new, general, and powerful ways to look at graph theory. The book, based on lectures given at the CBMS Workshop on the Combinatorics of Large Sparse Graphs, presents new perspectives in graph theory and helps to contribute to a sound scientific foundation for our understanding of discrete networks that permeate this information age.

Book Information

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Customer Reviews

This is a well-structured and useful book for researchers in random graphs, combinatorics and computer science. Because of its self-contained nature, and the careful way the topics are introduced, it is a good text for graduate level courses in the subject. -- Colin D. Cooper for Mathematical Reviews

First book is a bit better for math but this one shows the applications.

I am new to graph theory, pursue it as a hobby, write test applications in C#/.NET while struggling to understand theory with pencil and paper. I am very interested in understanding both generalizations of Erdos-Renyi graphs and spectral theory, and this book together with what you might call Fan Chung's companion book Spectral Graph Theory are a great basis for learning the ropes. I particularly appreciate the authors taking the time and space to explain the broader picture and the intuitive implications of theorems, a welcome divergence from the common practice of theorem-proof-theorem-proof ad nauseum. I highly recommend this book as both enjoyable and exciting to read!

The book summarizes recent developments in random graph theory, in particular the scale-free networks and small world networks, but classical Erdos-Renyi model is also covered. Many chapters have interesting introductions giving a brief historical background on the presented topic, followed by a series of rigorous proofs. There are numerous examples which relate the presented results to the real world empirical data, giving the reader further motivation to go through the mathematics. This book is certainly a "must have" item to anyone interested in modern graph theory and recent developments in the discipline.

The presence of large scale graphs in this set of lectures doesn't really remedy the lack of lower scale pattern matrices/ graphs? This book is better than the ten year earlier— Spectral Graph Theory (CBMS Regional Conference Series in Mathematics, No. 92)— by Fan Chung alone. Both are dry and near the bone in exposition, but I wish I had bought this one instead of the former. Since Fan Chung seems to have not learned or done a lot in the ten years between, I put the difference to the co-author. It is a crying shame and I really feel bad for a genius like Fan Chung to be so dry and uninspired on such an important subject as this. There is so much more involved in complex graph theory than the dry bones presented in these texts. Don't approach this text with a faint heart or a lack of will.

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