An Introduction To Random Matrices (Cambridge Studies In Advanced Mathematics)

Synopsis

The theory of random matrices plays an important role in many areas of pure mathematics and employs a variety of sophisticated mathematical tools (analytical, probabilistic and combinatorial). This diverse array of tools, while attesting to the vitality of the field, presents several formidable obstacles to the newcomer, and even the expert probabilist. This rigorous introduction to the basic theory is sufficiently self-contained to be accessible to graduate students in mathematics or related sciences, who have mastered probability theory at the graduate level, but have not necessarily been exposed to advanced notions of functional analysis, algebra or geometry. Useful background material is collected in the appendices and exercises are also included throughout to test the reader's understanding. Enumerative techniques, stochastic analysis, large deviations, concentration inequalities, disintegration and Lie algebras all are introduced in the text, which will enable readers to approach the research literature with confidence.

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Customer Reviews

My real rating would perhaps be a 4, but I do wish to counterbalance the other review, which seems a bit unfair.First, a review of the book would be most helpful if it evaluated the product rather than its stated goal. The intended audience is announced to be students familiar with at least graduate-level probability, but who have the persistence and mathematical sophistication to learn tools as they are needed for results. These tools are surprisingly well-summarized and give the reader some confidence that they won't have to take specialized topics courses in each of algebra, geometry,

functional analysis just to understand the proofs of an interesting theorem.Now there are a variety of writing styles in mathematics, and the popular ones are not necessarily the most useful to mathematical researchers. The style adopted here emphasizes details with the goal of developing the reader's technique, rather than of imparting a cocktail party's knowledge of the subject. This has been my primary complaint of most other introductions that I've found on the web, along with the complaint of many sources' omitting large segments of the field and being too narrow. All three of the authors are highly respected in this area, and I suspect this book is a product of their having synthesized respective notes/monographs reflecting their taste for what is most important or interesting. The outcome is a surprisingly broad coverage that illustrates how truly colorful this area is.I really dislike the rather common trend of some mathematics texts to spend many chapters developing machinery and then prove big results with apparent effortlessness.