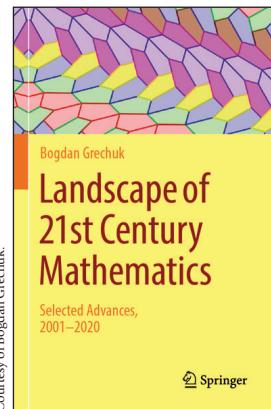




BOOKSHELF

New and Noteworthy Titles on our Bookshelf
December 2022



Courtesy of Bogdan Grechuk

this book doesn't pretend to cover all the new mathematics introduced over the last 20 years, it does strive to present all the major theorems that are easy to state and understand that have been published or submitted to ArXiv between 2001 and 2020. With a goal of being accessible to advanced undergraduates as well as mathematicians, very few proofs are included. Instead, the main focus is providing the historical background for topics along with recent developments. Theorems are stated precisely, and an intuitive explanation of the statement is given along with a discussion of how this recent theorem advances the field.

Some of the topics included are developments that led to the proof of the twin prime conjecture, recent results in random graphs and matrices, and new concepts in knot theory. While the author's goal was to include theorems from most areas in mathematics, some fields, such as Hodge theory, were not included due to their highly technical nature.

This is a wonderful collection of recent results that includes a wide scope of material which is well motivated and explained. It's a great resource that provides an excellent overview of some recent mathematics without requiring the reader be an expert in every field. This book would

Landscape of 21st Century Mathematics

Selected Advances 2001–2020

By Bogdan Grechuk

The quantity of new mathematics discovered yearly is staggering. How can we ever keep up with all of the new results and their significance? Perhaps the answer is that we can't, no matter how much we'd like to. If that answer isn't satisfying to you, consider picking up a copy of *Landscape of 21st Century Mathematics*. While

also be an excellent choice for a capstone course for senior math majors.

Dialogues Around Models and Uncertainty

An Interdisciplinary Perspective

Edited by Pauline Barrieu

While almost everyone would agree that interdisciplinary research is critical to making scientific progress, we are also familiar with the challenges that such research requires. Even collaborations across subfields of mathematics can be difficult as we navigate subtle differences in terminology. This can be amplified for interdisciplinary collaborations which require researchers to have the necessary language and mindset to effectively communicate their ideas to one another.

Dialogues Around Models and Uncertainty was written with a goal of promoting interdisciplinary research. Specifically, it aims to help researchers better understand what modelling and uncertainty look like across various fields. This collection is comprised of interviews with nineteen leading researchers in areas such as medicine, engineering, and mathematics. All contributors were asked the same questions and gave responses that are accessible to nonexperts. Each interview begins with a brief field introduction, along with an example of where models are used. Then the connection between mathematics and models, simulation and a model, and uncertainty and risk in a model are explored. This collection of interviews is suitable for anyone interested in branching into interdisciplinary research. It could even be used as a resource for students looking for current research topics in fields that rely on mathematical modeling.

The Bookshelf is prepared monthly by Notices Associate Editor Katelynn Kochalski.

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