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# Preface

Disorder effects on quantum spectra and dynamics have drawn the attention of both physicists and mathematicians. In this introduction to the subject we aim to present some of the relevant mathematics, paying heed also to the physics perspective.

The techniques presented here combine elements of analysis and probability, and the mathematical discussion is accompanied by comments with a relevant physics perspective. The seeds of the subject were initially planted by theoretical and experimental physicists. The mathematical analysis was, however, enabled not by filling the gaps in the theoretical physics arguments, but through paths which proceed on different tracks. As in other areas of mathematical physics, a mathematical formulation of the theory is expected both to be of intrinsic interest and to potentially also facilitate further propagation of insights which originated in physics.

The text is based on notes from courses that were presented at our respective institutions and attended by graduate students and postdoctoral researchers. Some of the lectures were delivered by course participants, and for that purpose we found the availability of organized material to be of great value.

The chapters in the book were originally intended to provide reading material for, roughly, a week each; but it is clear that for such a pace omissions should be made and some of the material left for discretionary reading. The book starts with some of the core topics of random operator theory, which are also covered in other texts (e.g., [**105, 82, 324, 228, 230, 367**]). From Chapter 5 on, the discussion also includes material which has so far been presented in research papers and not so much in monographs on the subject. The mark \* next to a section number indicates material which the reader is

advised to skip at first reading but which may later be found useful. The selection presented in the book is not exhaustive, and for some topics and methods the reader is referred to other resources.

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