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Sommario/riassunto	This textbook provides a graduate-level introduction to the spectral theory of linear operators on Banach and Hilbert spaces, guiding readers through key components of spectral theory and its applications in quantum physics. Based on their extensive teaching experience, the authors present topics in a progressive manner so that each chapter builds on the ones preceding. Researchers and students alike will also appreciate the exploration of more advanced applications and research

perspectives presented near the end of the book. Beginning with a brief introduction to the relationship between spectral theory and quantum physics, the authors go on to explore unbounded operators, analyzing closed, adjoint, and self-adjoint operators. Next, the spectrum of a closed operator is defined and the fundamental properties of Fredholm operators are introduced. The authors then develop the Grushin method to execute the spectral analysis of compact operators. The chapters that follow are devoted to examining Hille-Yoshida and Stone theorems, the spectral analysis of self-adjoint operators, and trace-class and Hilbert-Schmidt operators. The final chapter opens the discussion to several selected applications. Throughout this textbook, detailed proofs are given, and the statements are illustrated by a number of well-chosen examples. At the end, an appendix about foundational functional analysis theorems is provided to help the uninitiated reader. A Guide to Spectral Theory: Applications and Exercises is intended for graduate students taking an introductory course in spectral theory or operator theory. A background in linear functional analysis and partial differential equations is assumed; basic knowledge of bounded linear operators is useful but not required. PhD students and researchers will also find this volume to be of interest, particularly the research directions provided in later chapters.