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Sommario/riassunto	This book highlights the doctoral research of the author on electronic band structure engineering and ultrafast dynamics of Dirac semimetals. Dirac semimetals exhibit unique electronic band structure and novel physical properties with rich light-matter interaction, which inspires a wide range of potential applications. Enabling band engineering and

revealing ultrafast dynamics of Dirac semimetals is therefore important. In the research work covered by the book, the first ultrafast time- and angle-resolved photoemission spectroscopy with tunable probe photon energy is developed, providing new opportunities for exploring ultrafast dynamics in 3D quantum materials. Using the spectroscopy, the author investigates the band structure engineering and ultrafast dynamics of Dirac semimetals, realizing the long-sought-after chiral symmetry breaking in a Kekulé-ordered graphene with flat band and revealing the ultrafast dynamics of Dirac fermions in 3D Dirac semimetal for the first time. The work advances the research of the electronic structure of Dirac semimetals in two aspects. Firstly, it identifies the Kekulé-ordered graphene as a new system for exploring chiral symmetry breaking- related physics and flat band- induced instability, providing a very rare system to investigate their interplay. Secondly, it solves the long-standing challenge of directly visualizing the non-equilibrium electronic structure of 3D Dirac semimetal and opens up new opportunities for exploring the light-matter interaction in 3D quantum materials, especially the light-induced topological phase transitions in 3D topological materials.