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Nota di contenuto	Introduction -- Fundamentals of topological and moir´e Dirac matter -- Methodology review -- Moir´e physics in collapsed carbon nanotubes -- Robustness of topological crystalline insulator SnTe -- Fragile topology in threefold-symmetric systems -- Conclusions.
Sommario/riassunto	This book explores diverse systems including carbon nanotubes, topological crystalline insulators, Dirac semimetals, and other more recently discovered topological phases, such as fragile and higher-order topology. Topological systems and moiré graphene-based materials form two intertwined branches of current interest in condensed matter physics. Various computational and analytical methods are extensively described and combined, providing new perspectives on these emerging fields. Regarding moiré materials, collapsed chiral carbon nanotubes are shown here to be one-dimensional analogues of twisted bilayer graphene, exhibiting magic angle physics. A wide-ranging overview of modern topological phases of matter is also presented, with an emphasis on crystalline symmetries. In this regard, the robustness of topological crystalline

insulator SnTe under impurities, as well as its spin texture, is assessed. Additionally, over 50 two-dimensional materials with fragile topology are described, many of them for the first time, which can host fractionally filled corner states. In summary, this thesis constitutes an instructive presentation of novel theoretical advances in topological and Dirac matter, proposing several experimentally feasible material candidates for these exotic phases of matter. It is written in a clear manner and with a comprehensive introduction that will surely be of help for researchers and students entering these fields.
