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Autore	Kronberg Philipp P. <1939->
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Sommario/riassunto

Magnetic fields are important in the Universe and their effects contain the key to many astrophysical phenomena that are otherwise impossible to understand. This book presents an up-to-date overview of this fast-growing topic and its interconnections to plasma processes, astroparticle physics, high energy astrophysics, and cosmic evolution. The phenomenology and impact of magnetic fields are described in diverse astrophysical contexts within the Universe, from galaxies to galaxy clusters, the filaments and voids of the intergalactic medium, and out to the largest redshifts. The presentation of mathematical formulae is accessible and is designed to add insight into the broad range of topics discussed. Written for graduate students and researchers in physics, astrophysics and related disciplines, this volume will inspire readers to devise new ways of thinking about magnetic fields in space on galaxy scales and beyond.