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Nota di contenuto	Front matter -- Contents -- Preface -- PART I. Fundamentals of Structure Formation -- Chapter One. Introduction and Cosmological Background -- Chapter Two. Linear Growth of Cosmological Perturbations -- Chapter Three. Nonlinear Structure and Halo Formation -- Chapter Four. The Intergalactic Medium -- PART II. The First Structures -- Chapter Five. The First Stars -- Chapter Six. Stellar Feedback and Galaxy Formation -- Chapter Seven. Supermassive Black Holes -- Chapter Eight. Physics of Galaxy Evolution -- Chapter Nine. The Reionization of Intergalactic Hydrogen -- PART III. Observations of the Cosmic Dawn -- Chapter Ten. Surveys of High-Redshift Galaxies -- Chapter Eleven. The Lyman- Line as a Probe of the Early Universe -- Chapter Twelve. The 21-cm Line -- Chapter Thirteen. Other Probes of the First Galaxies -- Appendix A. Useful Numbers -- Appendix B. Cosmological Parameters -- Notes -- Further Reading -- Index
Sommario/riassunto	This book provides a comprehensive, self-contained introduction to one of the most exciting frontiers in astrophysics today: the quest to understand how the oldest and most distant galaxies in our universe first formed. Until now, most research on this question has been theoretical, but the next few years will bring about a new generation of large telescopes that promise to supply a flood of data about the infant

universe during its first billion years after the big bang. This book bridges the gap between theory and observation. It is an invaluable reference for students and researchers on early galaxies. The First Galaxies in the Universe starts from basic physical principles before moving on to more advanced material. Topics include the gravitational growth of structure, the intergalactic medium, the formation and evolution of the first stars and black holes, feedback and galaxy evolution, reionization, 21-cm cosmology, and more. Provides a comprehensive introduction to this exciting frontier in astrophysics Begins from first principles Covers advanced topics such as the first stars and 21-cm cosmology Prepares students for research using the next generation of large telescopes Discusses many open questions to be explored in the coming decade