

1. Record Nr.	UNINA9910300378203321
Autore	Ili Stéphane
Titolo	The Large Scale Structures [[electronic resource] ] : A Window on the Dark Components of the Universe // by Stéphane Ili
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2014
ISBN	3-319-07746-5
Edizione	[1st ed. 2014.]
Descrizione fisica	1 online resource (154 p.)
Collana	Springer Theses, Recognizing Outstanding Ph.D. Research, , 2190-5053
Disciplina	523.1126
Soggetti	Cosmology Gravitation Nuclear physics Classical and Quantum Gravitation, Relativity Theory Particle and Nuclear Physics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	"Doctoral Thesis accepted by the University of Paris-Sud, Orsay Cedex, France"--T.p.
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Introduction: The Ingredients of a Good Cosmological Probe -- Unravelling the iSW Effect Through the Matter Distribution -- The Impact of Identified Superstructures in the CMB -- Towards a Full Modelling of the iSW effect -- Studying Dark Matter Through the Lens of Reionization -- Conclusions & Perspectives.
Sommario/riassunto	Dark Energy and Dark Matter are among the greatest mysteries in modern cosmology. The present work explores in depth how large cosmic structures can help us unveil the nature of these components of the Universe. On the one hand, it focuses on a signature that Dark Energy imprints on the Cosmic Microwave Background through its impact on the time-evolution of gravitational potentials: the integrated Sachs-Wolfe (iSW) effect. Another cosmological background, the Cosmic Infrared Background, is considered for the first time in the study of the iSW effect and demonstrated to be a highly efficient and promising tracer. Changing the perspective on the problem, the use of superstructures for iSW detection is then extensively reviewed: using precise solutions to Einstein's general relativity equations, the full iSW

effect is computed, especially due to the cosmic voids predicted by the theory. Using measurements from the most recent data, it is subsequently shown how the iSW probes the solidity of the cosmological standard model. On the topic of Dark Matter, an original study is presented, showing that temperature measurements of the intergalactic medium shed light on the nature of Dark Matter particles, providing the tightest constraints on their decay properties.

---