

1. Record Nr.	UNINA9910969694803321
Titolo	Particle physics and cosmology : the fabric of spacetime : lecture notes of the Les Houches Summer School 2006 // edited by Francis Bernardeau, Christophe Grojean, and Jean Dalibard
Pubbl/distr/stampa	New York, : Elsevier, 2007
ISBN	1-281-05735-5 9786611057350 0-08-055060-6
Edizione	[1st ed.]
Descrizione fisica	1 online resource (591 p.)
Collana	Les Houches
Altri autori (Persone)	BernardeauFrancis GrojeanFrancis DalibardJ
Disciplina	523.1 539.72
Soggetti	Particles (Nuclear physics) Cosmology
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Front cover; Particle Physics and Cosmology: The Fabric of Spacetime; Copyright page; Previous sessions; Organizers; Lecturers; Participants; Preface; Contents; Part 1. Long Lectures; Course 1. Gravitational waves; 1. Introduction; 2. Linearization of Einstein equations; 3. Interaction of gravitational waves with point particles; 4. Effective stress-energy tensor of gravitational waves; 5. Generation of gravitational waves; 6. Application to binary systems; 7. Other astrophysical sources; 8. Cosmological sources; References; Course 2. Baryogenesis; 1. Observational evidence for the BAU 2. Sakharov's conditions for baryogenesis3. Example: GUT baryogenesis; 4. B and CP violation in the standard model; 5. Electroweak phase transition and electroweak baryogenesis; 6. A model of electroweak baryogenesis: 2HDM; 7. EWBG in the MSSM; 8. Other mechanisms; Leptogenesis; References; Course 3. String cosmology; 1. Dark energy; 2. Inflation; References; Course 4. Physics of the early universe and inflation; 1. Preamble; 2. Concise history of the early

universe; 3. Inflation; 4. Global geometry; 5. Generation of fluctuations from inflation; 6. Preheating after inflation; References

Course 5. Cosmic microwave background anisotropies up to second order
 1. Preamble; 2. Introduction; 3. Perturbing gravity; 4. The collisionless Boltzmann equation for photons; 5. Collision term; 6. The Brightness equation; 7. The Boltzmann equation for baryons and cold dark matter; 8. Linear solution of the Boltzmann equations; 9. Conclusions; Appendix A. Einstein's equations; Appendix B. First-order solutions of Einstein's equations in various eras; References; Course 6. Physics beyond the standard model and dark matter; 1. Introduction; 2. Why beyond the standard model
 3. Examples of physics beyond the standard model
 4. Evidence for dark matter; 5. What dark matter is not; 6. WIMP dark matter; 7. Dark horse candidates; 8. Cosmic coincidence; 9. Conclusions; Appendix A. Gravitational lensing; References; Part 2. Short Topical Lectures; Course 7. Effective field theories and gravitational radiation; 1. Lecture I; 2. Lecture II; 3. Conclusions; Appendix A. Redundant operators; References; Course 8. Holographic cosmology; 1. Introduction; 2. Framework; 3. Anti-de Sitter cosmologies; 4. Dual field theory evolution; 5. Discussion; References

Course 9. Neutrino physics and cosmology
 1. Introduction; 2. The cosmic neutrino background; 3. Neutrinos and Primordial Nucleosynthesis; 4. Extra radiation and the effective number of neutrinos; 5. Massive neutrinos; 6. Effects of neutrino masses on cosmology; 7. Current bounds on neutrino masses; 8. Future sensitivities on neutrino masses from cosmology; 9. Conclusions; References; Course 10. Cosmic microwave background: observational status; 1. Introduction; 2. CMB temperature anisotropies: the "early" days; 3. WMAP first release
 4. Polarization of the CMB - discovery and first measurements

Sommario/riassunto

This book is a collection of lectures given in August 2006 at the Les Houches Summer School on "Particle Physics and Cosmology: the Fabric of Spacetime?". It provides a pedagogical introduction to the various aspects of both particle physics beyond the Standard Model and Cosmology of the Early Universe, covering each topic from the basics to the most recent developments.· Provides a pedagogical introduction to topics at the interface of particle physics and cosmology· Addresses each topic from the basis to the most recent developments· Provides necessary tools to build new theor
