1. Record Nr. UNINA9910812803003321

Autore	Steane Andrew M
Titolo	Relativity made relatively easy / / Andrew M. Steane
Pubbl/distr/stampa	Oxford University Press USA - OSO
ISBN	0-19-165041-2
Descrizione fisica	xv, 419 p. : ill. ; ; 25 cm
Disciplina	530.11
Soggetti	Special relativity (Physics) Relativity (Physics)
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references (p. [413]) and index
Nota di contenuto	The relativistic world -- Basic ideas -- The Lorentz transformation -- Moving light sources -- Dynamics -- The conservation of energy-momentum -- Further kinematics -- Relativity and electromagnetism -- Electromagnetic radiation. An introduction to general relativity -- The principle of equivalence -- Warped spacetime -- Physics from the metric. Further special relativity -- Tensors and index notation -- Rediscovering electromagnetism -- Lagrangian mechanics -- Angular momentum -- Energy density -- What is spacetime? Appendices. Some basic arguments -- Constants and length scales -- Derivatives and index notation -- The field of an arbitrarily moving charge.
Sommario/riassunto	Relativity Made Relatively Easy presents an extensive study of Special Relativity and a gentle (but exact) introduction to General Relativity for undergraduate students of physics. Assuming almost no prior knowledge, it allows the student to handle all the Relativity needed for a university course, with explanations as simple, thorough, and engaging as possible. The aim is to make manageable what would otherwise be regarded as hard; to make derivations as simple as possible and physical ideas as transparent as possible. Lorentz invariants and four-vectors are introduced early on, but tensor notation is postponed until needed. In addition to the more basic ideas such as Doppler effect and collisions, the text introduces more advanced material such as radiation from

accelerating charges, Lagrangian methods, the stress-energy tensor, and introductory General Relativity, including Gaussian curvature, the Schwarzschild solution, gravitational lensing, and black holes. A second volume will extend the treatment of General Relativity somewhat more thoroughly, and also introduce Cosmology, spinors, and some field theory.