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Titolo	Solved Problems and Systematic Introduction to Special Relativity / / by Michael Tsamparlis
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Descrizione fisica	1 online resource (492 pages)
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Disciplina	530.11
Soggetti	Special relativity (Physics) Quantum electrodynamics Geometry, Algebraic Mechanics Mathematics Special Relativity Quantum Electrodynamics, Relativistic and Many-body Calculations Algebraic Geometry Classical Mechanics Applications of Mathematics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Part 1 - The Statement of the Problems Together With A Short Review of the Relevant Theory -- Chapter 1 - General material -- Chapter 2 - Linear spaces - coordinates -- Chapter 3 - Inner product -- Chapter 4 - Tensors -- Chapter 5 - Euclidian Inner product and Euclidian tensors -- Chapter 6 - Lorentz Inner product and Lorentz tensors -- Chapter 7 - 4-Vectors -- Chapter 8 - Systems of particle 4-vectors -- Chapter 9 - Making Physics -- Part 2 - Solutions -- Chapter 10 - Relativistic reactions -- Chapter 11 - Electromagnetic eld:Problems.
Sommario/riassunto	In most undergraduate physics classes Special Relativity is taught from a simplistic point of view using Newtonian concepts rather than the relativistic way of thinking. This results in students often finding it difficult to understand properly the new approach/new ideas, and consequently to solve relativistic problems. Furthermore, a number of

books treat the theory using advanced mathematics which is not necessary for the first approach to the theory. This book is intended to serve two roles: a. To treat a student in a systematic constructive way to the basic structure of the theory and b. To provide a large number of solved in-detail problems in the kinematics and dynamics of Special Relativity. Concerning the first aim the book introduces the basics of four-dimensional mathematics, i.e., Lorentz metric, relativistic tensors, and prepares, through working examples, the transition to General Relativity, which requires, besides the relativistic concepts, the use of Differential Geometry and tensor analysis. The presentation is concise and does not replace a book on Special Relativity. Concerning the second intention the large number of problems provides the necessary material which can be used in order to familiarize the student with the relativistic “world”. These problems can be used in the class by the teachers either as working examples or as problem sheets. It will be our pleasure if the book will be useful to both students and teachers.