1. Record Nr. UNINA9910300406303321

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Titolo	Relativity for Everyone : How Space-Time Bends / / by Kurt Fischer
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2015
ISBN	3-319-17891-1
Edizione	[2nd ed. 2015.]
Descrizione fisica	1 online resource (148 p.)
Collana	Undergraduate Lecture Notes in Physics, , 2192-4791
Disciplina	530.11
Soggetti	Gravitation Physics Cosmology Astronomy Classical and Quantum Gravitation, Relativity Theory Popular Science in Physics Popular Science in Astronomy
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Includes index.
Nota di contenuto	1 Light, Matter, and Energy -- 2 Light, Time, Mass, and Length -- 3 Light, Electricity, and Magnetism -- 4 Acceleration and Inertia -- 5 Inertia and Gravity. -- 6 Equivalence Principle in Action -- 7 How Mass Creates Gravity -- 8 Solving the Einstein Equation of Gravity -- 9 General Relativity in Action -- 10 Epilogue -- 11 Appendix.
Sommario/riassunto	This book, now in a revised and updated second edition, explains the theory of special and general relativity in detail without approaching Einstein's life or the historical background. The text is formulated in such a way that the reader will be able to understand the essence intuitively, and new sections have been added on time machines, the twin paradoxes, and tensors. The first part of the book focuses on the essentials of special relativity. It explains the famous equivalence between mass and energy and tells why Einstein was able to use the theory of electrodynamics as a template for his "electrodynamics of moving bodies". General relativity is then addressed, mainly with the help of thought experiments. Reference is made to the previously introduced special relativity and the equivalence principle and, using

many figures, it is explained how space-time is bending under gravity. The climax of the book is the Einstein equation of gravity, which describes the way in which matter bends space-time. The reader is shown how to obtain the famous Schwarzschild solution. Moreover, the book presents a numerically correct and yet intuitive explanation of the classic effects such as light bending and the advance of the perihelion. The book concludes by explaining the Friedmann model of the big bang and why the theory of gravity does not fit with quantum theory.