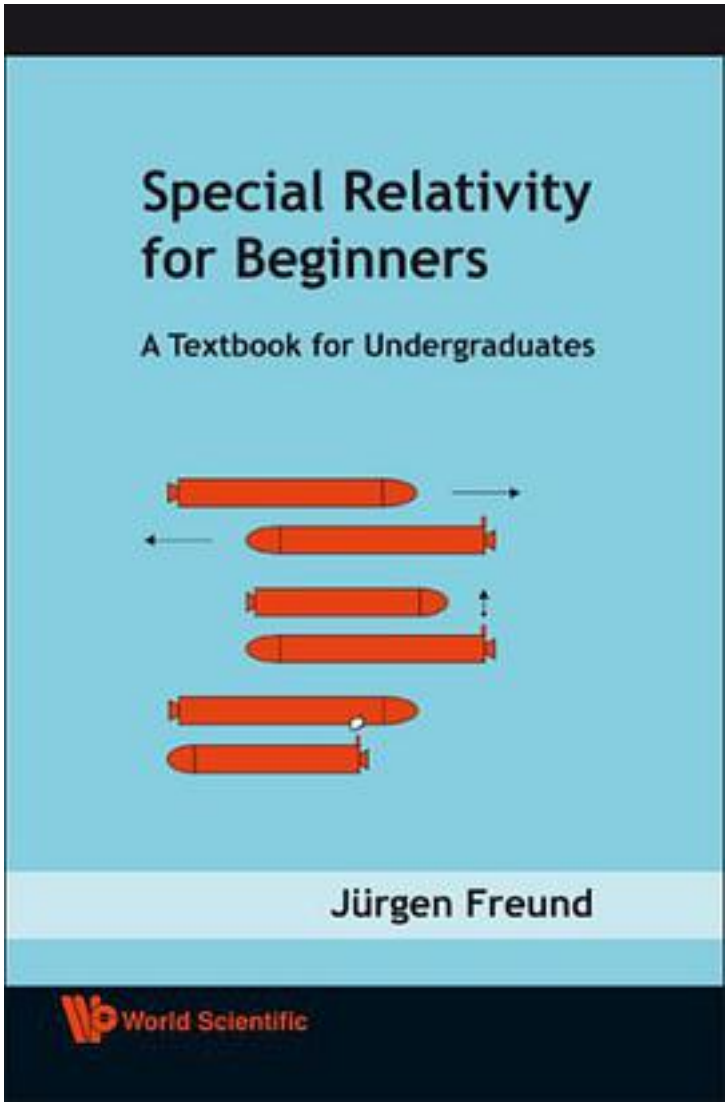
SPECIAL RELATIVITY FOR BEGINNERS



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出版者:

出版时间:2008-4

装帧:

isbn:9789812771605

This book, first appearing in German in 2004 under the title Spezielle RelativitÃ¤tstheorie fÃ¼r StudienanfÃ¤nger, offers access to the special theory of relativity for readers with a background in mathematics and physics comparable to a high school honors degree. All mathematical and physical competence required beyond that level is gradually developed through the book, as more advanced topics are introduced. The full tensor formalism, however, is dispensed with as it would only be a burden for the problems to be dealt with. Eventually, a substantial and comprehensive treatise on special relativity emerges which, with its gray-shaded formulary, is an invaluable reference manual for students and scientists alike.

Some crucial results are derived more than once with different approaches: the Lorentz transformation in one spatial direction three times, the Doppler formula four times, the Lorentz transformation in two directions twice; also twice the unification of electric and magnetic forces, the velocity addition formula, as well as the aberration formula. Beginners will be grateful to find several routes to the goal; moreover, for a theory like relativity, it is of fundamental importance to demonstrate that it is self-contained and without contradictions.

Contents:The Postulates of the Special Theory of Relativity; Time Dilation; Length Contraction; Lorentz Transformation; Minkowski Diagrams; Simultaneity; Transformation of Velocities; Aberration of Light; Accelerated Motion; Doppler Effect; Images of Fast Moving Objects; Mass and Momentum; Force; Energy; Four-Vectors and Scalar Products; Calculus with the Energy-Momentum Vector, Transformation of Electric and Magnetic Fields; and other papers.

作者介绍:

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