《闵可夫斯基时空几何 The geomet》

图书基本信息

书名：《闵可夫斯基时空几何 The geometry of Minkowski spacetime》

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内容概要

A mathematically rigorous presentation of the special theory of relativity, this text also offers extensive details of the physical significance of the mathematics. In addition to customary topics related to special relativity, this treatment encompasses a wide range of contemporary issues. Starting with the basics of Minkowski spacetime's geometrical and causal structure, the text examines Zeeman's characterization of the causal automorphisms of Minkowski spacetime and the Penrose theorem concerning the apparent shape of a relativistically moving sphere. Other topics include the construction of a geometric theory of the electromagnetic field, represented as a skew-symmetric linear transformation; an in-depth introduction to the theory of spinors, with several applications of spinor formalism; and a classification of electromagnetic fields in both tensor and spinor form. Appendixes introduce a topology for Minkowski spacetime and discuss Dirac's famous "Scissors Problem" and its relation to the notion of a two-valued representation of the Lorentz group. Appropriate for graduate-level courses, this text presumes only a knowledge of linear algebra and elementary point-set topology.

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