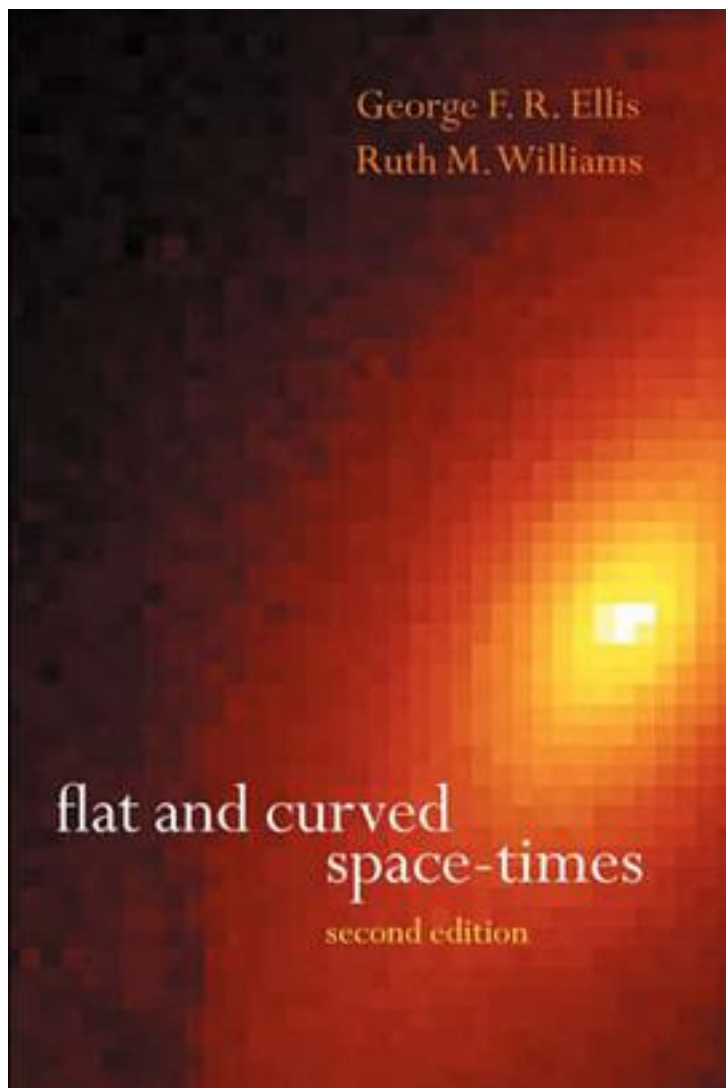# Flat and Curved Space-Times

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The present book explains special relativity and the basics of general relativity from a geometric viewpoint. Space-time geometry is emphasised throughout, and provides the basis of understanding of the special relativity effects of time dilation, length contraction, and the relativity of simultaneity. Bondi's K-calculus is introduced as a simple means of calculating the magnitudes of these effects, and leads to a derivation of the Lorentz transformation as a way of unifying these results. The invariant interval of flat space-time is generalised to that of curved space-times, and leads to an understanding of the basic properties of simple cosmological models and of the collapse of a star to form a black hole. The appendices enable the advanced student to master the application of four-tensors to the relativistic study of energy and momentum, and of electromagnetism. In addition, this new edition contains up-to-date information on black holes, gravitational collapse, and cosmology.

作者介绍:

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