



Relativity, Gravitation and GPS: Filling the Voids Second Edition

By Clive A Redwood

Createspace, United States, 2012. Paperback. Book Condition: New. 254 x 203 mm. Language: English . Brand New Book ***** Print on Demand *****.This book presents the fundamentals of the science of general relativity and gravitation (GR) and the principles of application of this science in the technology of the Global Positioning System (GPS). Of the science of GR, the topics covered include: tensor analysis, including the development of the metric tensor, tensor calculus and the Riemann-Christoffel tensor; the geodesic equation; the equations of gravitational fields in the absence and in the presence of matter; the generally covariant reformulation of Maxwellian electromagnetism; development of the energy tensors of fluids and of the electromagnetic field; relativising physical relationships; the Newtonian approximation; the Schwarzschild solution; the behaviour of light in a weak gravitational field: the relativistic precession of Mercury's orbit; and the Schwarzschild black hole. In the section on GPS, the topics covered include: the structure of the GPS; the synchronization of clocks in an Earth-Centered Earth-Fixed (ECEF) coordinate system; the setup and behaviour of clocks on satellites in the Space Segment; frequency shifts of signals from satellite-based clocks; the pseudorange and its relativistic and other sources of errors; and the principles...



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