

Bookshelf

Feynman Lectures on Gravitation, R.P. Feynman et al, Edited by B. Hatfield, Addison Wesley, ISBN 0 201 62734 5, 1995, 232pp.

This edited version of the first half of Feynman lectures on gravitation at Caltech in the early sixties, previously only available as photocopies at the Caltech bookstore, is a welcome addition to the existing book on Einstein's General Relativity. The point of view taken is that of a field theorist who tries to derive Einstein's theory by studying the properties and interactions of spin-two particles. It also presents the geometrical approach to the theory. There are beautiful discussions of many topics including the Equivalence Principle, the post-newtonian predictions, the Schwarzschild singularity, wormholes, superstars, cosmology and the generation of gravitational radiation. Although more than thirty years have elapsed since these lectures were first delivered, and some of the topics are outdated, or we have now better formulations, it is refreshing to read how Feynman's deep physical intuition goes from an elementary discussion of the conceptual foundations of the theory to topical subjects of the time, and occasionally he is far ahead of his time, as in a preferred critical density in cosmology ($\omega = 1$) which would almost twenty years later become one of the basic predictions of inflationary theory (although this prediction is currently being revised).

All those who have grown up in physics learning a good fraction of the subject in Feynman's books will be delighted to read another where again he is a master of exposition

depth and clarity. The excellent foreword by J. Preskill and K. Thorne places the book in the context of gravity research in the 60s, and gives more details about Feynman's positions on many issues. There is also a brief update of subsequent work by B. Hatfield.

Luis Alvarez-Gaume

The Collected Works of Eugene Paul Wigner

When Eugene Paul Wigner died on 1 January 1995, he left a fund of papers and correspondence. But it had already become clear that the astounding breadth and impact of his life's work merited a serious compilation. This was undertaken by a team of dedicated specialists and the outcome published by Springer. The master plan divided the material into Part A, five volumes of scientific papers edited by Arthur Wightman, and Part B, three volumes of historical, philosophical, and socio-political papers, edited by Jagdish Mehra. Already published in Part A are Volume I (Part I - Eugene Paul Wigner, A Biographical Sketch; Part II, Applied Group Theory 1926-35; and Part III, The Mathematical Papers); Volume II on Nuclear Physics and Volume V on Nuclear Energy (Part I - Eugene Wigner and Nuclear Energy, Part II - Memoir of the Uranium Project; Part III - Articles, Reports and Memoranda on Nuclear Energy; and Part IV - The Wigner Patents). Already published in Part B is Volume VI - Philosophical Reflections and Syntheses.

Now published in Part A are Volume III (Part I - Particles and Fields, annotated by Arthur Wightman, and Part II - Foundations of Quantum

Mechanics, annotated by Abner Shimony) and Volume IV, (Part I - Physical Chemistry, annotated by Nandor Balazs, and Part II Solid State Physics, annotated by Walter Kohn).

In preparation for Part B are Volume VII on Historical and Biographical Reflections and Syntheses, and Volume VIII on Socio-Political Reflections and Civil Defense.

Books received

Quantum Fields on a Lattice, by Istvan Montvay and Gernot Münster, Cambridge Monographs on Mathematical Physics, paperback version, ISBN 0 521 59917 2, £35/\$44.95

This useful book ('a must for every student taking up the subject') was reviewed by U. Wolff in the CERN Courier (September 1994, page 36) when it originally appeared in hardback.