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Reviews

'Black Holes and Time Warps'

reviewed by Mark Wainwright



Black Holes and Time Warps: Einstein's Outrageous Legacy

Kip Thorne, with foreword by Stephen Hawking

Over the last hundred years, human understanding of the nature of the universe has expanded at a mind-boggling rate; and over the last forty, Kip Thorne, along with Stephen Hawking, who wrote the foreword to this book, have been among the group of people shining most light into the darkness. But, aware that his research is carried out on behalf of us all, Thorne has not neglected the task of explaining its results to the rest of us. Very often the foremost exponents in a field do not happen also to have a gift for exposition, but when they do the results have a breadth and lucidity that no one else, however fine a writer, could hope to achieve, because they do not have the same clear view of the whole field.

Black holes and time warps is a wonderful, exciting book. Ordinarily, one can easily lose the momentum of reading a book over 500 pages long. But this book I could hardly put down, and in the brief periods when I had to do so, to eat or sleep, I was in a nervous frenzy to get back to it. Thorne's subject is relativity and space-time – the book is subtitled "Einstein's outrageous legacy" – and he traces its development from the discoveries that led Einstein to formulate the theory of relativity, right down to present day speculations (many of them due to him) about the possibility of time travel. The famous black holes of the title are the result of relativity's seemingly preposterous, but inescapable, conclusion that space-time contains singularities – regions where gravity appears to be infinite (at least until quantum effects are considered). The need to investigate what the properties of these peculiar objects must be has been the crucible in which much of the refinement of relativity theory has taken place, and they occupy a central place in the book.

Thorne's development of the subject is largely chronological, except where clarity demands that the exposition engage in a little time travel of its own. He introduces us to the many people who have contributed to the picture that is still emerging. As many of them are personally known to him, the portraits he gives are vivid and immediate. But these are not merely incidental biographical sketches to leaven the scientific exposition. Thorne depicts his colleagues at work, and the descriptions of their discoveries, discussions and mistakes are an integral part of the development of the subject: they do not distract from it but clarify it. (And when research in fundamental physics converges with work on nuclear weapons, he does not shirk from giving a careful and balanced account of the involvement of scientists concerned.) Thorne's enthusiasm and clarity

'Black Holes and Time Warps'

carry the reader away – with help from the many fine line illustrations and diagrams by Matthew Zimet. A great deal of thought and effort has gone into making these fully support the text and elucidate points which would otherwise be subtle or difficult.

Stephen Hawking has just followed up his classic *A brief history of time* with *The universe in a nutshell*, also reviewed in this issue of *Plus*. A sequel to *Black holes and time warps* would be equally welcome.

Book details:

Black Holes and Time Warps
Kip S. Thorne, Stephen Hawking
Paperback – 619 pages (Reissue, 25 August 1995)
Papermac
ISBN: 0333639693

You can buy the book and help *Plus* at the same time by clicking on the link on the left to purchase from amazon.co.uk, and the link to the right to purchase from amazon.com. *Plus* will earn a small commission from your purchase.

About the reviewer

Guest reviewer **Mark Wainwright** was, until recently, a member of the *Plus* team.

He is currently studying for a Masters degree in Linguistics.



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