

BOOKSHELF

Relativity: A Very Short Introduction by Russell Stannard, Oxford University Press. Paperback ISBN 9780199236220, £7.99.

In the series of *Very Short Introductions* by Oxford University Press there have been nuggets and non-nuggets. The book *Relativity* is definitely a nugget.

We can all do the simple maths and use Pythagoras's theorem but I have always found it difficult – even from Albert Einstein's popular little book – to gain some “more intuitive” understanding of relativity. Russell Stannard's text is the best that I have read.

He begins with the familiar: simultaneity, constancy of the speed of light, the paradox of the twin astronauts and so on. In each case he goes straight to the heart of the phenomenon – and each time I felt that I came out with a deeper understanding and better appreciation of how simple it all is. Stannard has in this short work collected all of the best analogies that I have come across while also managing to keep the reader smiling with some tongue-in-cheek remarks.

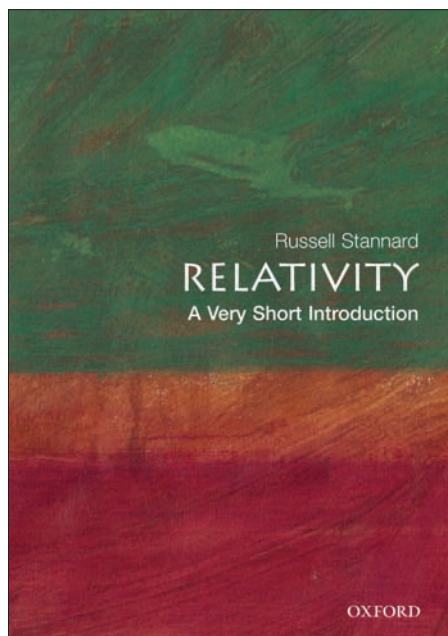
There are a number of mathematical expressions sprinkled throughout the text; and they are not beyond the abilities of the interested layperson. The drawings and formulae are good, with artwork that is vastly better than in some of the other volumes in the series. However, OUP has still not got it all entirely right. For example, the square root symbol – important in this particular text – is just a V symbol. Weird.

In all, this is a pleasant book to read. It reminds one of how strange reality really is and how difficult it is for us humans to make simple mental models. This book is to be recommended.

Robert Cailliau, CERN.

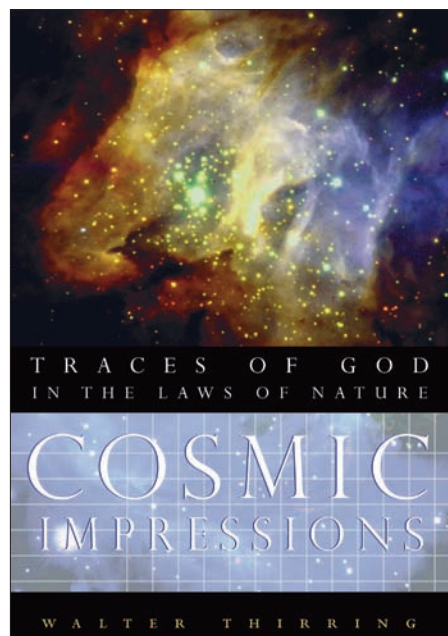
Cosmic Impressions: Traces of God in the Laws of Nature by Walter Thirring, Templeton Foundation Press. Paperback ISBN 9781599471150, \$19.95.

This is a translation from German of *Kosmische Impressionen: Gottes Spuren in der Naturgesetzen* so, in principle, I should have little to add to the excellent review by Herwig Schopper (*CERN Courier* March 2005 p48). The book is a presentation of the universe, its history and its laws, as well as covering cosmology, physics, chemistry and biology. It describes the fantastic progress of our knowledge from the end of the 19th century to the present. Thirring's point of



view is that the structure of the universe is so beautiful, and the conditions of our existence on Earth so miraculously set, that it is difficult not to see the signs of a superior architect behind it all. Whether or not you agree with the author (I do), this volume is extremely informative for everybody. It also contains colourful accounts of the encounters between Thirring (not only a witness but an important player) and the great men who made these incredible changes to our views of the world. (For more details, see Schopper's review.)

The book makes it clear to all, including atheists, that naive positivism à la August Comte is dead. First you have the probabilistic nature of quantum mechanics: if you take a uranium nucleus you cannot predict if it will decay tomorrow or in one million years. Even in purely classical mechanics, you cannot predict the evolution of a complex system from initial conditions known with an arbitrarily small uncertainty beyond the “Lyapounov time”. Moreover, in nature you find spontaneously broken symmetries, which break in an unpredictable way. Many people, such as Murray Gell-Mann, think that the universe can be randomly projected on certain states at random times. Therefore we are far from the “clockmaker” God of Descartes. Despite all of this, however, the predictivity of physics has never been as fantastic as now: the calculated value of the magnetic moment of the electron given to 12 digits agrees



perfectly with the experimental value.

Like Schopper, I can only recommend this book. The author makes a considerable effort to avoid technicalities. As a scientist, I am not in a position to say whether someone without a scientific background could follow it, but I believe that it is ideally suited to engineers, especially accelerator engineers, who aren't always aware of the beautiful endeavour to which they contribute so much.

André Martin, CERN.

Books received

The Thermodynamic Universe: Exploring the Limits of Physics by B G Sidharth, World Scientific. Hardback ISBN 9789812812346, £29 (\$58).

This text examines developments that are leading to a paradigm shift and a new horizon for physics, at a time when the underlying principle of reductionism is being questioned. Presenting the new paradigm in fuzzy space-time, it is based on some 100 published journal papers and two recent books. This work has predicted correctly epoch-turning observations, for example, that the universe is accelerating with a small cosmological constant driven by dark energy – when the prevalent line of thinking was the exact opposite. Regarding a unified description of gravitation and electromagnetism via fluctuations, several other highlighted features presented are in complete agreement with experiments.

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Alan Jackson, former Technical Director of the Project (ASP)

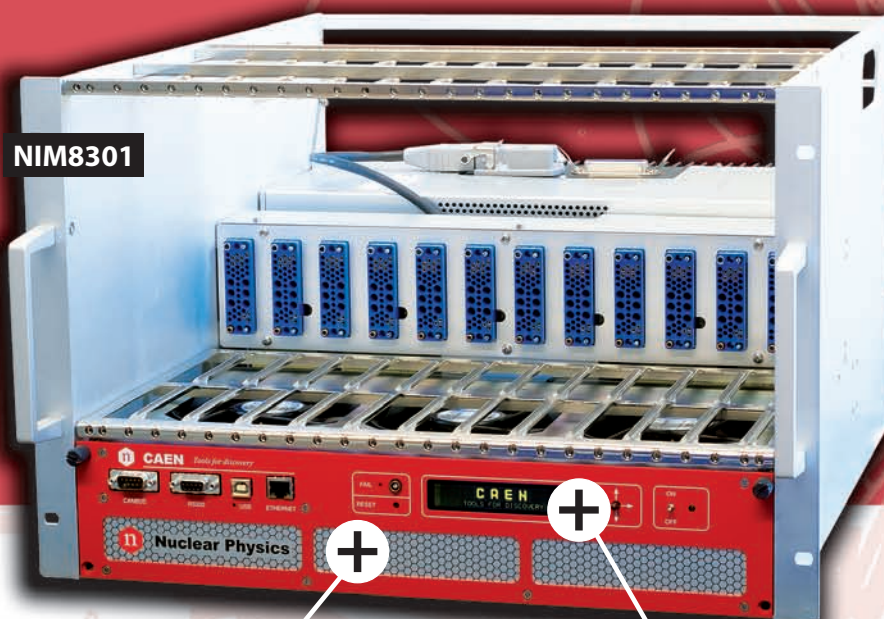


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Gianluca Chiozzi, Head of the Control and Instrumentation Software Department (ESO)

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Maximum Currents	17/45 A @ $\pm 6V$ 3.4/18 A @ $\pm 12 V$ 3.4/8 A @ $\pm 24 V$ 0.3 A @ 115Vac (optional)	5 A @ $\pm 6V$ 3.A @ $\pm 12 V$ 1.5 A @ $\pm 24 V$	17/45 A @ $\pm 6V$ 3.4/18 A @ $\pm 12 V$ 3.4/8 A @ $\pm 24 V$ 0.3 A @ 115Vac (optional)