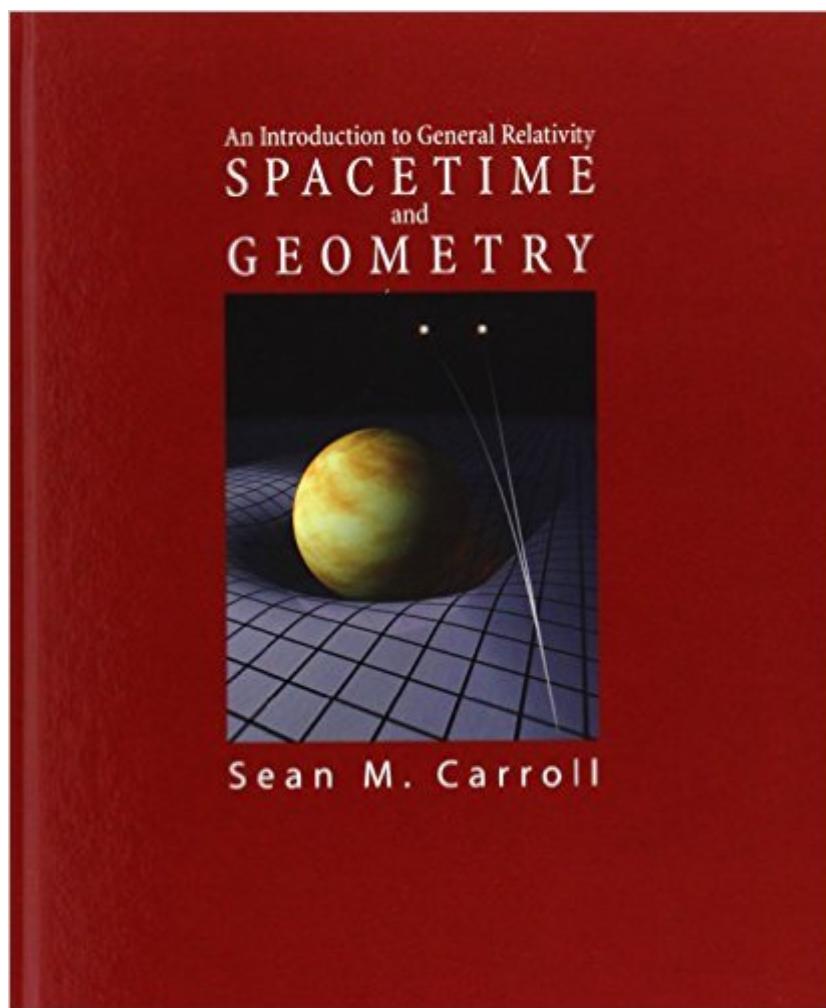


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# Spacetime And Geometry: An Introduction To General Relativity



## Synopsis

Spacetime and Geometry: An Introduction to General Relativity provides a lucid and thoroughly modern introduction to general relativity. With an accessible and lively writing style, it introduces modern techniques to what can often be a formal and intimidating subject. Readers are led from the physics of flat spacetime (special relativity), through the intricacies of differential geometry and Einstein's equations, and on to exciting applications such as black holes, gravitational radiation, and cosmology.

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## Customer Reviews

"Spacetime and Geometry: An Introduction to General Relativity" provides a lucid and thoroughly modern introduction to general relativity. With an accessible and lively writing style, it introduces modern techniques to what can often be a formal and intimidating subject. Readers are led from the physics of flat spacetime (special relativity), through the intricacies of differential geometry and Einstein's equations, and on to exciting applications such as black holes, gravitational radiation, and cosmology.

Sean Carroll is an assistant professor in the Physics Department, Enrico Fermi Institute, and Center for Cosmological Physics at the University of Chicago. His research ranges over a number of topics in theoretical physics, focusing on cosmology, field theory, and gravitation. He received his Ph.D. from Harvard in 1993, and spent time as a postdoctoral researcher at the Center for Theoretical Physics at MIT and the Institute for Theoretical Physics at the University of California, Santa Barbara. He has been awarded fellowships from the Sloan and Packard foundations, as well as the

MIT Graduate Student Council Teaching Award. For more information, see his Web site at <http://pancake.uchicago.edu/~carroll>

This is an outstanding textbook on general relativity. It's very detailed, well written and the order of the topics is very well chosen, covering a wide range of themes. The level is appropriate to graduate student, with a quite decent mathematical background. In particular, the first chapter is a review of special relativity: a brief but clear summary, useful to become familiar with the use of the 4-vector notation, too. The second and third chapters are committed to manifolds and curvature, and you have to learn the fundaments of differential geometry. The chapters from fourth to seventh are focused on the "real" general relativity, from Einstein's equation to gravitational waves: this is a quite advanced dissertation, and I think it is necessary to have a basic background from an introductory book. The last two chapters are an introduction to cosmology (brief, but pretty good) and an introduction to quantum field theory in curved spacetime (but I never read this chapter, sorry!). Remark that the book contains ten (10!) very useful appendixes on additional topics that are not debated in the ordinary chapters: they are a good extension to examine in depth some themes (in particular on a second reading). Very good binding and hardcover: it's durable and solid, with a good value for money.

Hallo, from a passionate of theoretical physics. The book illustrates the fundamental physical concepts and the essential mathematical tools, required by general relativity, in a fully descriptive, comprehensive, rigorous and self-contained way. The arduous equations of general relativity are explained step by step (not so common in scientific books). You are driven in a progressively profound understanding of the physical reality as shaped by matter and energy. The different approaches to the theoretical formulation of general relativity combined with the exposure of quantum field theory equip the reader with extremely high-level, extended and solid conceptual and mathematical skills, which allow for the ultimate step forward: quantum gravity! (to learn in specific books). Michele Grosso Torino, Italy

Well-printed, but the scaling of the page was shrunk slightly from the original.

A perfect book for to study General Relativity!

Great!

The descriptions of the mathematics in the first few chapters is rather drawn out but easy to read. I'm taking Quantum Field Theory, using Peskin and Schroeder, and I've found that reading about operations on Metrics and Tensors in component form in Carroll is much easier. Haven't made it through the whole course yet but I'm satisfied so far.

This is the best book I have ever encountered on the subject. As a physicist and a mathematician, it was VERY important for me to get the mathematical background and framework for General Relativity. Carroll delivered it with finesse.

Some pages were misprinted, wrong placement, upside down. This is the international version of the text.

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