

## A Most Incomprehensible Thing: Notes Towards a Very Gentle Introduction to the **Mathematics of Relativity**

By Peter Collier



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\*\*\* March 2017 - a new, third edition (orange cover, ISBN 9780957389465) of this paperback book is now available. \*\*\*

#### A clear, enjoyable guide to the mathematics of relativity - An Amazon Best Seller

To really understand relativity - one of the cornerstones of modern physics - you have to get to grips with the mathematics. This user-friendly self-study guide is aimed at the general reader who is motivated to tackle that not insignificant challenge. The book is written using straightforward and accessible language, with clear derivations and explanations as well as numerous fully solved problems. For those with minimal mathematical background, the first chapter provides a crash course in foundation mathematics. The reader is then taken gently by the hand and guided through a wide range of fundamental topics, including Newtonian mechanics; the Lorentz transformations; tensor calculus; the Einstein field equations; the Schwarzschild solution (which gives a good approximation of the spacetime of our Solar System); simple black holes and relativistic cosmology. Following the historic 2015 LIGO (Laser Interferometer Gravitational-Wave Observatory) detection, there is now an additional chapter on gravitational waves, ripples in the fabric of spacetime that potentially provide a revolutionary new way to study the universe.

Special relativity helps explain a huge range of non-gravitational physical phenomena and has some strangely counter-intuitive consequences. These include time dilation, length contraction, the relativity of simultaneity, massenergy equivalence and an absolute speed limit. General relativity, the leading theory of gravity, is at the heart of our understanding of cosmology and black holes.

Understand even the basics of Einstein's amazing theory and the world will never seem the same again.

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"Well done - a magnificent achievement" - Amazon.co.uk

"Highly recommended for anyone willing to invest some time and effort." -Amazon.com

#### **Contents**

Preface

Introduction

- 1 Foundation mathematics
- 2 Newtonian mechanics
- 3 Special relativity
- 4 Introducing the manifold
- 5 Scalars, vectors, one-forms and tensors
- 6 More on curvature
- 7 General relativity
- 8 The Newtonian limit
- 9 The Schwarzschild metric
- 10 Schwarzschild black holes
- 11 Cosmology
- 12 Gravitational waves

Appendix: The Riemann curvature tensor

Bibliography

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November 2016 - this revised and corrected second edition now includes a new chapter on gravitational waves and a new appendix showing the derivation of the Riemann curvature tensor and some of its most important symmetries.



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