

# **A First Course in General Relativity**

Bernard F Schutz

(2<sup>nd</sup> Edition, Cambridge University Press, 2009)

## **Solutions to Selected Exercises**

(Version 1.0, November 2009)

To the user of these solutions:

This document contains solutions to many of the Exercises in the second edition of *A First Course in General Relativity*. The textbook offers an extensive collection of exercises, some of which prove results omitted from the text, or form the basis for later exercises, or provide the foundation for results in later chapters. Doing exercises is integral to the process of learning a subject as complex and conceptually challenging as general relativity. These solutions, therefore, are meant to help users of this book master exercises that they might have had difficulty with. It is assumed that an attempt has already been made at solving the problem!

Solutions are provided to those problems which might present particular conceptual challenges; those which require just routine algebra, and those which require computer solutions, are generally not included.

I hope you find the solutions helpful!

Bernard Schutz  
Potsdam, Germany

# First Course In General Relativity Solution Manual

**Karin Nielsen-Saines**



## **First Course In General Relativity Solution Manual:**

*A Student's Manual for A First Course in General Relativity* Robert B. Scott, 2016-01-21 This comprehensive student manual has been designed to accompany the leading textbook by Bernard Schutz *A First Course in General Relativity* and uses detailed solutions cross referenced to several introductory and more advanced textbooks to enable self learners undergraduates and postgraduates to master general relativity through problem solving The perfect accompaniment to Schutz's textbook this manual guides the reader step by step through over 200 exercises with clear easy to follow derivations It provides detailed solutions to almost half of Schutz's exercises and includes 125 brand new supplementary problems that address the subtle points of each chapter It includes a comprehensive index and collects useful mathematical results such as transformation matrices and Christoffel symbols for commonly studied spacetimes in an appendix Supported by an online table categorising exercises a Maple worksheet and an instructors manual this text provides an invaluable resource for all students and instructors using Schutz's textbook

300 Problems in Special and General Relativity Mattias Blennow, Tommy Ohlsson, 2021-12-09 Einstein's theories of special relativity and general relativity form a core part of today's undergraduate or Masters level physics curriculum This is a supplementary problem book or student's manual consisting of 150 problems in each of special and general relativity The problems which have been developed tested and refined by the authors over the past two decades are a mixture of short form and multi part extended problems with hints provided where appropriate Complete solutions are elaborated for every problem in a different section of the book some solutions include brief discussions on their physical or historical significance Designed as a companion text to complement a main relativity textbook it does not assume access to any specific textbook This is a helpful resource for advanced students for self study a source of problems for university teaching assistants or as inspiration for instructors and examiners constructing problems for their lectures homework or exams

**A First Course in General Relativity** Bernard F. Schutz, 1985-01-31 This textbook develops general relativity and its associated mathematics from a minimum of prerequisites leading to a physical understanding of the theory in some depth

Problems and Solutions on Vector Spaces for Physicists Robert B. Scott, 2023-08-09 This book offers supporting material for the comprehensive textbook *Mathematical Physics A Modern Introduction to Its Foundations* authored by Sadri Hassani The book covers mathematical preliminaries and all of Part I in Hassani's textbook The subjects covered here include the key topics necessary for physicists to form a solid mathematical foundation vectors and linear maps algebras operators matrices and spectral decomposition In particular the vector space concept is a central unifying theme in later chapters of Hassani's textbook Detailed solutions are provided to one third of the end of chapter exercises in the first six chapters of his text The present volume helps upper undergraduate and early postgraduate physics students deepen their understanding of the mathematics that they encounter in physics learn physics more efficiently and use mathematics with more confidence and creativity The content is thus presented rigorously but

remains accessible to physics students New exercises are also proposed some with solutions some without so that the total number of unsolved exercises remains unchanged They are chosen to help explain difficult concepts amplify key points in Hassani s textbook or make further connections with applications in physics Taken together with Hassani s work the two form a self contained set and the solutions make detailed reference to Hassani s text The solutions also refer to other mathematics and physics textbooks providing entry points to further literature that finds a useful place in the physicist s personal library

**A First Course in General Relativity** Bernard Schutz,2009-05-14 Second edition of a widely used textbook providing the first step into general relativity for undergraduate students with minimal mathematical background

Core List of Books and Journals in Science and Technology Russell H. Powell,James R. Powell,1987-10      **The Publishers' Trade List Annual** ,1992      Books in Print Supplement ,1985      **Scientific and Technical Books and Serials in Print** ,1989      **Catalog of Copyright Entries. Third Series** Library of Congress. Copyright Office,1961 Includes Part 1 Number 1 2 Books and Pamphlets Including Serials and Contributions to Periodicals January December

**Instructor's Manual with Abbreviated Solutions to Accompany University Physics** Alvin Hudson,1982

Solutions of the Examples in A Treatise on Differential Equations Andrew Russell Forsyth,1918      **Books to Come;** **Bowker's Advance Book Reporting Service** ,1960      **Library Journal** ,1969      **Books to Come** R.R. Bowker Company,1959      *Paperbound Books in Print* ,1992      *CERN Courier* ,2015      **Books in Series** ,1979      **Nature** Sir Norman Lockyer,1914      **New Technical Books** ,1926

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