# An Introduction to Riemannian Geometry: With Applications to Mechanics and Relativity (Universitext)

*By Leonor Godinho, José Natário*

**An Introduction to Riemannian Geometry: With Applications to Mechanics and Relativity (Universitext)** By Leonor Godinho, José Natário

Unlike many other texts on differential geometry, this textbook also offers interesting applications to geometric mechanics and general relativity.

The first part is a concise and self-contained introduction to the basics of manifolds, differential forms, metrics and curvature. The second part studies applications to mechanics and relativity including the proofs of the Hawking and Penrose singularity theorems. It can be independently used for one-semester courses in either of these subjects.

The main ideas are illustrated and further developed by numerous examples and over 300 exercises. Detailed solutions are provided for many of these exercises, making *An Introduction to Riemannian Geometry* ideal for self-study.

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**An Introduction to Riemannian Geometry: With Applications to Mechanics and Relativity (Universitext) By Leonor Godinho, José Natário Bibliography**

- Sales Rank: #1418940 in Books
- Published on: 2014-08-07
- Released on: 2014-08-07
- Original language: English
- Number of items: 1
- Dimensions: 9.25" h x 1.09" w x 6.10" l, .0 pounds
- Binding: Paperback
- 467 pages

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From the Back Cover

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About the Author

Leonor Godinho is professor at Instituto Superior Técnico (Universidade de Lisboa). She regularly teaches Riemannian geometry, symplectic geometry and introductory geometry courses. Her research activity is focused on symplectic geometry and its connections to algebraic geometry and combinatorics.

José Natário is professor of mathematics at Instituto Superior Técnico (Universidade de Lisboa). He regularly lectures on differential and Riemannian geometry, geometric mechanics and mathematical relativity. His research focuses on general relativity, a subject on which he has published many research papers and a book, "General Relativity Without Calculus" (Springer, 2011).

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