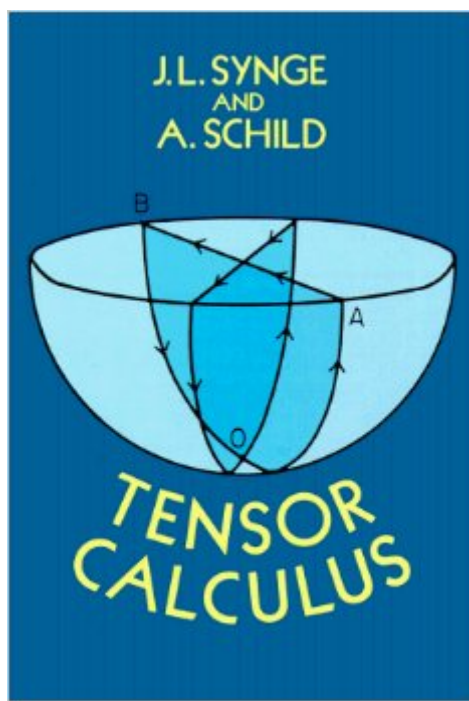


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Tensor Calculus



Synopsis

"This book is an excellent classroom text, since it is clearly written, contains numerous problems and exercises, and at the end of each chapter has a summary of the significant results of the chapter." — Quarterly of Applied Mathematics. Fundamental introduction for beginning student of absolute differential calculus and for those interested in applications of tensor calculus to mathematical physics and engineering. Topics include spaces and tensors; basic operations in Riemannian space, curvature of space, special types of space, relative tensors, ideas of volume, and more.

Book Information

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Customer Reviews

"The introduction of numbers as coordinates...is an act of violence..." -- H. Weyl. If that's so, this is a very violent book. While it's true that physicists, particularly those working in General Relativity, were slow to abandon the coordinate approach, there can be little doubt that the sea of indices form of Tensor Calculus runs counter to the modern approach to Differential Geometry, with its emphasis on abstract spaces, manifolds, bundles, exterior algebra, differential forms, diffeomorphisms, Lie groups, etc. Physicists trained prior to the trend towards employing modern mathematics will likely be right at home with this book, which presents the tensor calculus in the form developed by Levi-Civita and Ricci in the late 19th/early 20th Century. On the other hand, classically trained Physicists tend to be hopelessly confused when confronted by modern Differential Geometry, which relies on so much more of the modern machinery from areas such as Topology, Global Analysis,

and Group Theory/Representation Theory. Students would be better served to pursue the subject framed in a more modern context. That means learning about manifolds and analysis on manifolds. The best introduction is probably Spivak's "Calculus on Manifolds", followed by Munkres "Analysis on Manifolds". Darling's "Differential Forms and Connections" and Sternberg's "Lectures on Differential Geometry" are well regarded, as is do Carmo's "Differential Geometry of Curves and Surfaces". A working knowledge of multivariable calculus, linear algebra, and elementary analysis are required for making heads or tails out of these books, even though they are introductory in nature.

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