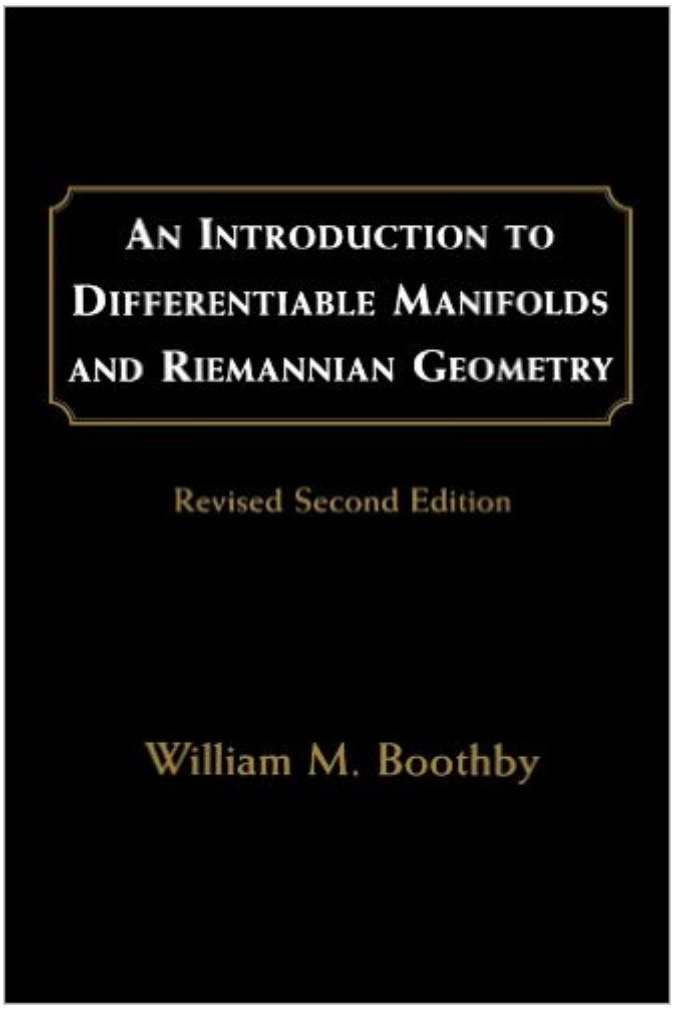
An Introduction To Differentiable Manifolds And Riemannian Geometry, Revised, Volume 120, Second Edition (Pure And Applied Mathematics)



Synopsis

The second edition of this text has sold over 6,000 copies since publication in 1986 and this revision will make it even more useful. This is the only book available that is approachable by "beginners" in this subject. It has become an essential introduction to the subject for mathematics students, engineers, physicists, and economists who need to learn how to apply these vital methods. It is also the only book that thoroughly reviews certain areas of advanced calculus that are necessary to understand the subject. Line and surface integrals Divergence and curl of vector fields

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Customer Reviews

This book is masterfully written and excels for its clearness and elementary conception of every detail. It starts reviewing the necessary tools of analysis (inverse and implicit function theorems, constant rank theorem, existence and unicity of ordinary differential equations). Then, it dedicates much attention to motivate and construct the concept of a manifold M and the definition of the tangent space at a point of M (this is much harder to do for an abstract manifold than for a submanifold of the Euclidean space, and for the beginner, it demands a lot of training and time to master the different isomorphic disguises that the tangent space can adopt). Immediately, the book deals with submanifolds and submersions, vector fields and their one parameter flows, the Lie algebra of smooth vector fields and the Frobenius theorem. A very good introduction to Lie groups and Lie algebras follows, (including the correspondence between Lie subalgebras and Lie

subgroups in any Lie group), discrete subgroups, the exponential map, the adjoint representation and homogeneous spaces. Later we get into integration and Stokes theorem, invariant integration on compact Lie groups (i.e.: Haar measure) and the Weyl decomposition theorem for representations of compact Lie groups. Fine, fine, fine. Next, Boothby introduce us in the realm of Riemannian geometry: covariant derivatives, parallel transport, the Levi-Civita connection, the Riemannian curvature, geodesics, normal neighbourhoods and of course the marvelous theorem of Hopf and Rinow. Maybe, here the pace is a bit faster: at places one needs pencil and paper to draw and compute. But overall, this chapter (the seventh) provides a rigourous and quick acquaintance with this vast part of geometry. A valuable glimpse on symmetric spaces ends this chapter.

Pure and Applied Mathematics) Binary Polynomial Transforms and Non-Linear Digital Filters (Chapman & Hall/CRC Pure and Applied Mathematics)