who enjoyed studying *Complex manifolds* it is worth noting that *Complex manifolds and deformation structures* is a considerably expanded version of parts of that book.

Certainly those interested in complex geometry (whether algebraic, analytic, or differential geometric) will want a copy of *Complex manifolds and deformation of complex structures* on their bookshelf.

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Semi-Riemannian geometry: *With applications to relativity*, by Barrett O'Neill, Pure and Applied Mathematics, vol. 103, Academic Press, 1983, xiii + 457 pp., $45.00. ISBN 0-12-526740-1

This book gives a thorough introduction to semi-Riemannian (i.e., pseudo-Riemannian) manifolds using the notation of modern differential geometry. The author assumes that the reader has some knowledge of point-set topology, but does not assume a background in differential geometry. Thus, the book begins with a good introduction to smooth manifolds and tensor fields on manifolds.

If M is a smooth manifold, then a semi-Riemannian metric tensor g is a symmetric nondegenerate $(0,2)$ tensor field on M of constant signature. In local coordinates $x_1, x_2, \ldots, x_n$ one writes

$$ds^2 = \sum_{i=1}^{n} \sum_{j=1}^{n} g_{ij}\, dx_i\, dx_j.$$

Locally g is represented by the symmetric matrix $(g_{ij} = g_{ij}(x_1, \ldots, x_n))$ of smooth functions of x. This tensor is required to have a constant number s of negative eigenvalues and $n - s$ positive eigenvalues. The index s is zero for Riemannian (i.e., positive definite) manifolds, and for Lorentzian manifolds