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BOOK REVIEW

Differential Geometry: *Bundles, Connections, Metrics and Curvature*, by Clifford Henry Taubes, Oxford University Press, Oxford, xiii + 298 pp, ISBN: 978-0-19-960588-0 (hbk), 978-0-19-960587-3 (pbk).

This book is a textbook for beginners on the topics mentioned in its title, which play a central role in the contemporary differential geometry. According to the author, the audience is expected to consist mainly of first-year graduate students and advanced undergraduate students. The text resembles indeed accompanying notes of a lecture course. The language is a bit less formal than usual and there is no numbering of formulae for reference purposes. Only in several cases a formula is denoted by $(*)$ in order to be cited in the course of some long proof. If at a certain point some earlier construction or example is needed, the author usually does not hesitate to repeat it briefly. Relatively a few assertions have the honour to be distinguished as Theorems, Lemmas, Propositions and Corollaries, 64 according to the list at the end of the book, which are in average of one in four and a half pages. The situation with the definitions is quite similar. The book has no list of references. Instead of that each chapter ends with a section "Additional reading" which contains titles of books covering the topic of the chapter. In the very rare cases an article or a book is cited, the reference is given inside the text. A nice feature of the book is that it contains many examples. I cannot resist mentioning the extensive use of $\mathfrak{Fraktur}$ for notational purposes. It would be hardly an exaggeration to say that the number of objects denoted by $\mathfrak{Fraktur}$ letters and by standard latin letters are almost the same. So, when finishing the book you will not only know a lot about bundles, connections, metrics and curvature, but also feel like reading German novels printed before World War I.

Let me now describe the contents of the nineteen chapters. Chapter 1 introduces the notions of smooth manifold, smooth map between manifolds, submanifold, immersion, submersion and partition of unity. Although the author warns that the reader is expected to be familiar with smooth manifolds and no proofs will be given, out of the one lemma and four theorems (the inverse function theorem, the implicit function theorem, Sard's theorem and the contraction mapping theorem)