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Sommario/riassunto

This invaluable book is based on the notes of a graduate course on differential geometry which the author gave at the Nankai Institute of Mathematics. It consists of two parts: the first part contains an introduction to the geometric theory of characteristic classes due to Shiing-shen Chern and Andre Weil, as well as a proof of the Gauss-Bonnet-Chern theorem based on the Mathai-Quillen construction of Thom forms; the second part presents analytic proofs of the Poincare-Hopf index formula, as well as the Morse inequalities based on deformations introduced by Edward Witten.
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