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Descrizione fisica	1 online resource (396 pages)
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Sommario/riassunto	The book starts with an introduction to Geometric Invariant Theory (GIT). The fundamental results of Hilbert and Mumford are exposed as well as more recent topics such as the instability flag, the finiteness of the number of quotients, and the variation of quotients. In the second part, GIT is applied to solve the classification problem of decorated principal bundles on a compact Riemann surface. The solution is a quasi-projective moduli scheme which parameterizes those objects that satisfy a semistability condition originating from gauge theory. The moduli space is equipped with a generalized Hitchin map. Via the universal Kobayashi-Hitchin correspondence, these moduli spaces are related to moduli spaces of solutions of certain vortex type equations. Potential applications include the study of representation spaces of the fundamental group of compact Riemann surfaces. The book concludes with a brief discussion of generalizations of these findings to higher dimensional base varieties, positive characteristic, and parabolic bundles. The text is fairly self-contained (e.g., the necessary background from the theory of principal bundles is included) and features numerous examples and exercises. It addresses students and researchers with a working knowledge of elementary algebraic geometry.