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Titolo	Introduction to classical integrable systems // Olivier Babelon, Denis Bernard, Michel Talon [[electronic resource]]
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Descrizione fisica	1 online resource (xi, 602 pages) : digital, PDF file(s)
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Nota di contenuto	; 1. Introduction -- ; 2. Integrable dynamical systems -- ; 3. Synopsis of integrable systems -- ; 4 Algebraic methods -- ; 5. Analytical methods -- ; 6. The closed Toda chain -- 7. The Calogero-Moser model -- ; 8. Isomonodromic deformations -- ; 9. Grassmannian and integrable hierarchies -- ; 10. The KP hierarchy -- ; 11. The KdV hierarchy -- ; 12. The Toda field Theories -- ; 13 Classical inverse scattering method -- ; 14. Symplectic geometry -- ; 15. Riemann surfaces -- ; 16. Lie algebras.
Sommario/riassunto	This book provides a thorough introduction to the theory of classical integrable systems, discussing the various approaches to the subject and explaining their interrelations. The book begins by introducing the central ideas of the theory of integrable systems, based on Lax

representations, loop groups and Riemann surfaces. These ideas are then illustrated with detailed studies of model systems. The connection between isomonodromic deformation and integrability is discussed, and integrable field theories are covered in detail. The KP, KdV and Toda hierarchies are explained using the notion of Grassmannian, vertex operators and pseudo-differential operators. A chapter is devoted to the inverse scattering method and three complementary chapters cover the necessary mathematical tools from symplectic geometry, Riemann surfaces and Lie algebras. The book contains many worked examples and is suitable for use as a textbook on graduate courses. It also provides a comprehensive reference for researchers already working in the field.
