1. Record Nr. UNINA9910784306403321 Autore Hirota Ryogo <1932-> Titolo The direct method in soliton theory / / Ryogo Hirota; translated from Japanese and edited by Atsushi Nagai, Jon Nimmo, and Claire Gilson [[electronic resource]] Cambridge:,: Cambridge University Press,, 2004 Pubbl/distr/stampa **ISBN** 1-107-15013-2 1-280-54012-5 9786610540129 0-511-21484-7 0-511-21663-7 0-511-21126-0 0-511-31541-4 0-511-54304-2 0-511-21303-4 Descrizione fisica 1 online resource (xi, 200 pages) : digital, PDF file(s) Collana Cambridge tracts in mathematics;; 155 Disciplina 530.12/4 Soggetti Solitons Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Title from publisher's bibliographic system (viewed on 05 Oct 2015). Note generali Nota di bibliografia Includes bibliographical references (p. 195-197) and index. 1. Bilinearization of soliton equations -- 2. Determinants and pfaffians Nota di contenuto -- 3. Structure of soliton equations -- 4. Backlund transformations --Afterword -- References -- Index. The bilinear, or Hirota's direct, method was invented in the early 1970s Sommario/riassunto as an elementary means of constructing soliton solutions that avoided the use of the heavy machinery of the inverse scattering transform and was successfully used to construct the multisoliton solutions of many new equations. In the 1980s the deeper significance of the tools used in this method - Hirota derivatives and the bilinear form - came to be understood as a key ingredient in Sato's theory and the connections with affine Lie algebras. The main part of this book concerns the more

modern version of the method in which solutions are expressed in the form of determinants and pfaffians. While maintaining the original

philosophy of using relatively simple mathematics, it has, nevertheless, been influenced by the deeper understanding that came out of the work of the Kyoto school. The book will be essential for all those working in soliton theory.