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Autore	Yan Zhenya
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4. Concluding Remarks -- Acknowledgements -- References -- Anti-Dark Solitons of the Resonant Nonlinear Schrodinger Equation -- Abstract -- 1. Introduction -- 2. Bilinear Form of the Resonant Nonlinear Schrodinger Equation -- 3. Soliton Solutions -- 4. Periodic Wave Solutions -- 5. Conclusions -- Acknowledgement -- References -- Similarity Solutions for the Boiti-Leon-Pempinelli Equation with Symbolic Computation -- Abstract -- 1. Introduction -- 2. Symmetry Reductions for the BLP Equation -- 3. Similarity Solutions -- 4. Maple Implementation of the Further Extended Tanh Method -- 5. Conclusion and Discussion -- References -- The New Sine-Gordon Expansion Algorithms to Construct Exact Solutions of Nonlinear Wave Equations -- Abstract -- 1. Introduction and Proposition -- 2. The New Sine-Gordon Equation Expansion Algorithm -- 3. The Applications of Algorithm I -- 4. The Application of Algorithm II -- 5. Conclusions -- Acknowledgement -- References -- Index.

Sommario/riassunto

With the rapid development of science and technology, the computer has become an important tool in many science fields. Particularly, symbolic computation, which is one of the most exciting and challenging areas. It has been applied in many sciences such as mathematics, physics, chemistry, biology, mechanics, engineering, etc., in particular, non-linear sciences ad complex sciences. Nowadays, many symbolic computation softwares have been used to deal with these problems. Up to now, there have existed many non-linear differential/difference systems related to solitons and chaos in the non-linear science field.In order to understand these complex physical phenomena, it is important to research some of their basic properties. Because of the complexity of these non-linear systems, with the symbolic computation, this new book presents important research on non-linear differential/difference systems, related to solitons and chaos as well as other non-linear sciences in views of constructive algorithms.