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    Titolo   Painlevé III: A Case Study in the Geometry of Meromorphic Connections
                        [[electronic resource] /] / by Martin A. Guest, Claus Hertling

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    Descrizione fisica 1 online resource (XII, 204 p. 12 illus.)

    Collana   Lecture Notes in Mathematics, , 0075-8434 ; ; 2198

    Disciplina   515.352

    Soggetti   Differential equations
                        Algebraic geometry
                        Special functions
                        Functions of complex variables
                        Ordinary Differential Equations
                        Algebraic Geometry
                        Special Functions
                        Functions of a Complex Variable

    Lingua di pubblicazione   Inglese

    Formato   Materiale a stampa

    Livello bibliografico   Monografia

    Nota di bibliografia   Includes bibliographical references and index.

    Nota di contenuto   1. Introduction -- 2.- The Riemann-Hilbert correspondence for P3D6
                        bundles -- 3. (Ir)Reducibility -- 4. Isomonodromic families -- 5. Useful
                        formulae: three 2 × 2 matrices -- 6. P3D6-TEP bundles -- 7. P3D6-
                        TEJPA bundles and moduli spaces of their monodromy tuples --
                        8. Normal forms of P3D6-TEJPA bundles and their moduli spaces --
                        9. Generalities on the Painleve´ equations -- 10. Solutions of the
                        Painleve´ equation PIII (0, 0, 4, 4) -- 13. Comparison with the setting
                        of Its, Novokshenov, and Niles -- 12. Asymptotics of all solutions near
                        0 -- ...Bibliography. Index.

    Sommario/riassunto The purpose of this monograph is two-fold: it introduces a conceptual
                        language for the geometrical objects underlying Painlevé
                        equations, and it offers new results on a particular Painlevé III equation
                        of type PIII (D6), called PIII (0, 0, 4, 4), describing its relation to
                        isomonodromic families of vector bundles on P1 with meromorphic
                        connections. This equation is equivalent to the radial sine (or sinh)

Gordon equation and, as such, it appears widely in geometry and physics.   It is used here as a very concrete and classical illustration of the modern theory of vector bundles with meromorphic connections. Complex multi-valued solutions on C* are the natural context for most of the monograph, but in the last four chapters real solutions on R>0 (with or without singularities) are addressed. These provide examples of variations of TERP structures, which are related to tt geometry and harmonic bundles.   As an application, a new global picture of0 is given.