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   Autore          Sainz Miguel A

   Titolo          Modal Interval Analysis : New Tools for Numerical Information / / by
                   Miguel A. Sainz, Joaquim Armengol, Remei Calm, Pau Herrero, Lambert
                   Jorba, Josep Vehi

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   Descrizione fisica   1 online resource (XVI, 316 p. 37 illus., 3 illus. in color.)

   Collana         Lecture Notes in Mathematics, , 0075-8434 ; ; 2091

   Disciplina      515

   Soggetti        Mathematical analysis
                   Analysis (Mathematics)
                   Control engineering
                   Numerical analysis
                   Analysis
                   Control and Systems Theory
                   Numeric Computing

   Lingua di pubblicazione   Inglese

   Formato         Materiale a stampa

   Livello bibliografico   Monografia

   Note generali   Bibliographic Level Mode of Issuance: Monograph

   Nota di bibliografia   Includes bibliographical references and index.

   Nota di contenuto   Intervals -- Modal Intervals -- Modal interval extensions --
                       Interpretability and optimality -- Interval arithmetic -- Equations and
                       systems -- Twins and f -star algorithm -- Marks -- Intervals of marks
                       -- Some related problems.

   Sommario/riassunto   This book presents an innovative new approach to interval analysis.
                        Modal Interval Analysis (MIA) is an attempt to go beyond the limitations
                        of classic intervals in terms of their structural, algebraic and logical
                        features. The starting point of MIA is quite simple: It consists in
                        defining a modal interval that attaches a quantifier to a classical
                        interval and in introducing the basic relation of inclusion between
                        modal intervals by means of the inclusion of the sets of predicates they
                        accept. This modal approach introduces interval extensions of the real
                        continuous functions, identifies equivalences between logical formulas
                        and interval inclusions, and provides the semantic theorems that justify
                        these equivalences, along with guidelines for arriving at these

inclusions. Applications of these equivalences in different areas illustrate the obtained results. The book also presents a new interval object: marks, which aspire to be a new form of numerical treatment of errors in measurements and computations.