1. Record Nr.   UNISALENTO991002946249707536

   Autore   Robertz, Daniel

   Titolo   Formal algorithmic elimination for PDEs / Daniel Robertz

   Pubbl/distr/stampa Cham [Switzerland] : Springer, c2014

   ISBN   9783319114446

   Descrizione fisica vi, 283 p. ; ill. ; 24 cm

   Collana   Lecture notes in mathematics, 0075-8434 ; 2121

   Classificazione   AMS 12H05
                       AMS 13P10
                       AMS 16S36
                       AMS 35-02
                       LC QA192.R62

   Disciplina   512.94

   Soggetti   Differential equations, Partial
                       Elimination

   Lingua di pubblicazione   Inglese

   Formato   Materiale a stampa

   Livello bibliografico   Monografia

   Nota di bibliografia   Includes bibliographical references and index

   Nota di contenuto   Introduction ; Formal methods for PDE systems ; Differential
                       elimination for analytic functions ; Basic principles and supplementary
                       material ; References ; List of algorithms ; List of examples ; Index of
                       notation ; Index

   Sommario/riassunto Investigating the correspondence between systems of partial
                       differential equations and their analytic solutions using a formal
                       approach, this monograph presents algorithms to determine the set of
                       analytic solutions of such a system and conversely to find differential
                       equations whose set of solutions coincides with a given parametrized
                       set of analytic functions. After giving a detailed introduction to Janet
                       bases and Thomas decomposition, the problem of finding an implicit
                       description of certain sets of analytic functions in terms of differential
                       equations is addressed. Effective methods of varying generality are
                       developed to solve the differential elimination problems that arise in
                       this context. In particular, it is demonstrated how the symbolic solution
                       of partial differential equations profits from the study of the
                       implicitization problem. For instance, certain families of exact solutions
                       of the Navier-Stokes equations can be computed