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Differential Equations: Linear, Nonlinear, Ordinary, Partial

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Differential Equations

Linear, Nonlinear, Ordinary, Partial

A.C. King, J. Billingham and S.R. Otto

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Prsentation de l'diteurFinding and interpreting the solutions of differential equations is a central and essential part of applied mathematics. This book aims to enable the reader to develop the required skills needed for a thorough understanding of the subject. The authors focus on the business of constructing solutions analytically, and interpreting their meaning, using rigorous analysis where needed. MATLAB is used extensively to illustrate the material. There are many worked examples based on interesting and unusual real world problems. A large selection of exercises is provided, including several lengthier projects, some of which involve the use of MATLAB. The coverage is broad, ranging from basic second-order ODEs and PDEs, through to techniques for nonlinear differential equations, chaos, asymptotics and control theory. This

broad coverage, the authors' clear presentation and the fact that the book has been thoroughly class-tested will increase its attraction to undergraduates at each stage of their studies. Revue de presse 'This is a useful book, providing an excellent introduction to postgraduate studies in applied mathematics. It is very well produced and one is grateful to the publishers for having produced a useful book which, at its paperback price, is reasonable these days I have no hesitation in giving this book my full recommendation.' The Mathematical Gazette 'an eloquent applied differential equations textbook I'd be delighted if each new graduate student coming to our department knew and was inspired by the contents of this attractive new textbook.' Robert E. O'Malley, Jr, University of Washington 'I can highly recommend this book for a first introduction to differential equations to both students and teachers.' Monatshefte für Mathematik 'The book is well-organized, theoretical material, illustrative examples, exercises and projects are carefully selected The textbook provides a well-balanced exposition of theoretical results and applied techniques and is a welcome contribution to the existing literature on differential equations.' Zentralblatt MATH 'This is an eloquent applied differential equations textbook, with its own identity There's no doubt, however, that I'd be delighted if each new graduate student coming to our department knew and was inspired by the contents of this attractive new textbook.' Society for Industrial and Applied Mathematics 'There are not many books like this about. The real benefit is that it is well within reach of a competent physics student and it should satisfy the most inquisitive minds. Secondly, it contains material on nonlinear differential equations, a topic that is usually left out. The text introduces clever techniques that will help the student develop useful skills rapidly.' Contemporary Physics 'a very well written book that will be useful for researchers in ODE-s, PDE-s, classical Calculus, for the physicists, engineers, chemists, biologists and those applying differential equations. The book is warmly recommended also to students with basic knowledge in Analysis.' Acta Scientiarum Mathematicarum 'Presentation de l'auteur Finding and interpreting the solutions of differential equations is a central and essential part of applied mathematics. This book aims to enable the reader to develop the required skills needed for a thorough understanding of the subject. The authors focus on the business of constructing solutions analytically, and interpreting their meaning, using rigorous analysis where needed. MATLAB is used extensively to illustrate the material. There are many worked examples based on interesting and unusual real world problems. A large selection of exercises is provided, including several lengthier projects, some of which involve the use of MATLAB. The coverage is broad, ranging from basic second-order ODEs and PDEs, through to techniques for nonlinear differential equations, chaos, asymptotics and control theory. This broad coverage, the authors' clear presentation and the fact that the book has been thoroughly class-tested will increase its attraction to undergraduates at each stage of their studies.