



Boundary Elements Theory And Applications

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Summary : Free boundary elements theory and applications pdf download - the author's ambition for this publication was to make bem accessible to the student as well as to the professional engineer for this reason his main task was to organize and present the material in such a way so that the book becomes user-friendly and easy to comprehend taking into account only the mathematics and mechanics to which students have been exposed during their undergraduate studies this effort led to an innovative in many aspects way of presenting bem including the derivation of fundamental solutions the integral representation of the solutions and the boundary integral equations for various governing differential equations in a simple way minimizing a recourse to mathematics with which the student is not familiar the indicial and tensorial notations though they facilitate the author's work and allow to borrow ready to use expressions from the literature have been avoided in the present book nevertheless all the necessary preliminary mathematical concepts have been included in order to make the book complete and self-sufficient throughout the book every concept is followed by example problems which have been worked out in detail and with all the necessary clarifications furthermore each chapter of the book is enriched with problems-to-solve these problems serve a threefold purpose some of them are simple and aim at applying and better understanding the presented theory some others are more difficult and aim at extending the theory to special cases requiring a deeper understanding of the concepts and others are small projects which serve the purpose of familiarizing the student with bem programming and the programs contained in the cd-rom the latter class of problems is very important as it helps students to comprehend the usefulness and effectiveness of the method by solving real-life engineering problems through these problems students realize that the bem is a powerful computational tool and not an alternative theoretical approach for dealing with physical problems my experience in teaching bem shows that this is the students most favorite type of problems they are delighted to solve them since they integrate their knowledge and make them feel confident in mastering bem the cd-rom which accompanies the book contains the source codes of all the computer programs developed in the book so

that the student or the engineer can use them for the solution of a broad class of problems among them are general potential problems problems of torsion thermal conductivity deflection of membranes and plates flow of incompressible fluids flow through porous media in isotropic or anisotropic homogeneous or composite bodies as well as plane elastostatic problems in simply or multiply connected domains as one can readily find out from the variety of the applications the book is useful for engineers of all disciplines the author is hopeful that the present book will introduce the reader to bem in an easy smooth and pleasant way and also contribute to its dissemination as a modern robust computational tool for solving engineering problems

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