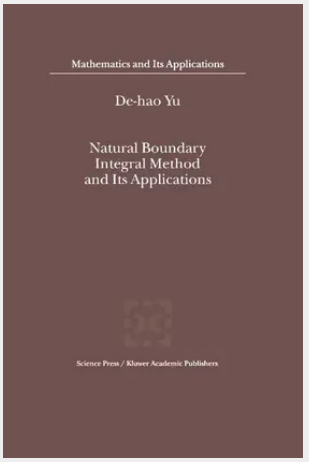
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Natural Boundary Integral Method and Its Applications



Boundary element methods are very important for solving boundary value problems in PDEs. Many boundary value problems of partial differential equations can be reduced into boundary integral equations by the natural boundary reduction. In this book the natural boundary integral method, suggested and developed by Feng and Yu, is introduced systematically. It is quite different from popular boundary element methods and has many distinctive advantages. The variational principle is conserved after the natural boundary reduction, and some useful properties are also preserved faithfully. Moreover, it can be applied directly and naturally in the coupling method and the domain decomposition method of finite and boundary elements. Most of the material in this book has only appeared in the author's previous papers. Compared with its Chinese edition (Science Press, Beijing, 1993), many new research results such as the domain decomposition methods based on the natural boundary reduction are added.

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