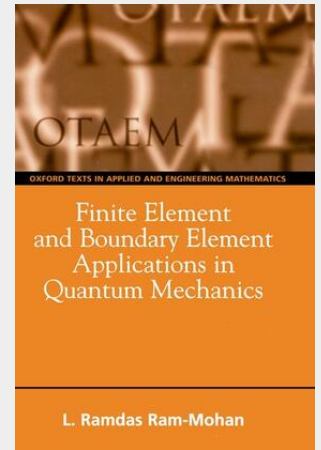


Ram-Mohan

FINITE ELEMENT BOUNDAR OTAEM C

This book introduces the finite element and boundary element methods (FEM & BEM) for applications to quantum mechanical systems. A discretization of the action integral with finite elements, followed by application of variational principles, brings a very general approach to the solution of Schroedinger's equation for physical systems in arbitrary geometries with complex mixed boundary conditions. The variational approach is a common thread through the book and is used for the improvement of solutions to spectroscopic accuracy, to adaptively improve finite element meshes, to develop a time-dependent theory, and also to generate the solution of large sparse matrix eigenvalue problems. A thorough introduction to BEM is given using the modelling of surface plasmons, quantum electron waveguides, and quantum scattering as illustrative examples. The book should be useful to graduate students and researchers in basic quantum theory, quantum semiconductor modeling, computational physics, mathematics and chemistry.



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