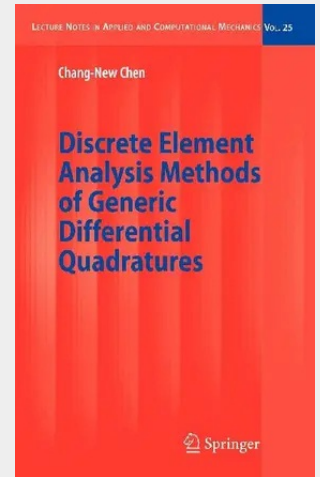


Discrete Element Analysis Methods of Generic Differential Quadratures

Following the advance in computer technology, the numerical technique has made significant progress in the past decades. Among the major techniques available for numerically analyzing continuum mechanics problems, the finite difference method is most early developed. It is difficult to deal with continuum mechanics problems showing complex curvilinear geometries by using this method. The other method that can consistently discretize continuum mechanics problems showing arbitrarily complex geometries is the finite element method. In addition, boundary element method is also a useful numerical method. In the past decade, the differential quadrature and generic differential quadrature based discrete element analysis methods have been developed and used to solve various continuum mechanics problems. These methods have the same advantage as the finite element method of consistently discretizing continuum mechanics problems having arbitrarily complex geometries. This book includes my research results obtained in developing the related novel discrete element analysis methods using both of the extended differential quadrature based spatial and temporal elements. It is attempted to introduce the developed numerical techniques as applied to the solution of various continuum mechanics problems, systematically.

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