In summary, the book is valuable, but its presentation could be simplified. Some additional comments are as follows:

1. The curves and surfaces studied in this book are parametric. The proper concept for continuity should be reparametrization continuity rather than C^k.
2. The relationship between the parametric form and the implicit form are not mentioned. All genus-0 algebraic curves can be rationally parametrized. For example, the technique used in Chapter 4 also works for singular cubic curves.
3. For a rational curve (or surface), if some weights of the denominator are zero, one could use subdivision and then control the curve (or surface) in each of the subdomains. What tradeoffs exist between this approach and the approach expounded in the book?

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33[73-02, 65-02, 73V10, 73V20, 73M25, 65N30].—M. H. ALIABADI & D. P. ROOKE, *Numerical Fracture Mechanics*, Solid Mechanics and its Applications, Vol. 8, Kluwer, Dordrecht, 1991, 276 pp., 25 cm. Price $99.00/Dfl.190.00.

The purpose of this book is to present numerical algorithms for the solution of fracture mechanics problems.

The book begins with an introduction to basics of fracture mechanics. The first chapter includes topics on the concept of energy balance and the definition of stress intensity factors for sharp cracks.

In Chapter 2, the basic equations of linear elasticity are reviewed. Then the equivalence of the stress intensity factor and the energy release rate approaches is stated. The three-dimensional stress field near the crack front is given. Some fracture mechanics criteria for mixed-mode loading are discussed.

Chapter 3 is devoted to some numerical methods in linear elastic fracture mechanics. The boundary collocation technique and the finite element method are briefly described. The body force method, the method of lines, and the edge function method are also mentioned.

The remaining part of the book concentrates mainly on the use of the boundary element method in linear fracture analysis. In Chapter 4, the direct boundary element formulation for two- and three-dimensional elasticity problems is presented. Procedures for the assemblage of equation system and for the numerical evaluation of coefficient matrices are described in detail.

Chapter 5 pertains to boundary element techniques for the calculation of stress intensity factors. These techniques include special crack-tip elements, Green's functions, the energy compliance method, the J-integral, and a technique based on a subtraction of singularity. Numerical examples and the comparison with finite element results are provided. It is concluded that the most efficient technique is 'the subtraction of singularity'.

Chapter 6 is devoted to techniques for computing and using weight functions for the stress intensity factor evaluation. Several boundary element algorithms are presented for the determination of numerical weight functions.

It should be noted that two parts of the book (Chapters 1–3 and Chapters 4–6) are different. The first part is a brief survey of basics in fracture mechanics and theory of elasticity. Some paragraphs of this part may be omitted because it may not serve a purpose for the reader, owing to its meager contents. The second part provides fairly detailed information to the reader and contains recent advances in application of boundary element methods to fracture mechanics problems. A schematic of a three-dimensional crack problem is shown on the cover of the book, but there is no three-dimensional example inside of it. Nevertheless, this does not diminish the value of the book. This book should be of interest to researchers and graduate students in the field of computational fracture mechanics.

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34[65–06, 65Y05].—RICHARD F. SINCOVEC, DAVID E. KEYES, MICHAEL R. LEUZE, LINDA R. PETZOLD & DANIEL A. REED (Editors), *Proceedings of the Sixth SIAM Conference on Parallel Processing for Scientific Computing*, Vols. I and II, SIAM Proceedings Series, SIAM, Philadelphia, PA, 1993, xx+1041 pp., $25\frac{1}{2}$ cm. Price: Softcover $95.00.

This collection of 183 short papers and abstracts from the 1993 SIAM Conference on Parallel Processing for Scientific Computing is almost twice as large as the previous proceedings from the 1991 conference, representing the continued growth and interest in high-performance computing. This conference focussed on themes from the High Performance Computing and Communications (HPCC) program, and on Grand Challenge problems in particular. Progress is being driven by the availability of parallel hardware (CM-2, CM-5, Intel i860, Intel Paragon, KSR, workstation networks, etc.), software for distributed network computing, and the large number of applications scientists using parallel computers. The organizers strove to bring applications scientists and computer scientists together to discuss common problems and solutions, and the breadth of topics discussed below reflects this diverse attendance. Owing to the large number of papers, we will just outline the topics covered, rather than discuss individual papers.

The applications cover *computational fluid dynamics* (hydrodynamics, mixed aerodynamics-chemistry and aerodynamics-acoustics codes, relativistic hydrodynamics, and viscoelastic polymer flows), *geophysical modeling* (coupled atmospheric-ocean models, multiphase contaminant transport in porous media, oil refinery modeling, drought monitoring, and magnetosphere modeling), *materials science* (crystal structures, superconductor modeling, piezoelectric modeling), *molecular dynamics, electrical engineering* (electromagnetic scattering, image processing, optimizing VLSI interconnects, semiconductor modeling, circuit simulation, and Helmholtz equation) and various other applications (nuclear reactor vessel simulation, liquid crystal physics, analysis of biological oscillators, control theory, chemical topology enumerations, neural nets, the automotive industry, tissue growth simulation, x-ray crystallography, and map analysis).