MATHEMATICS OF COMPUTATION
Volume 67, Number 223, July 1998, Pages 1331–1334
S 0025-5718(98)01012-6

REVIEWS AND DESCRIPTIONS OF TABLES AND BOOKS

The numbers in brackets are assigned according to the American Mathematical Society classification scheme. The 1991 Mathematics Subject Classification can be found in the annual subject index of *Mathematical Reviews* starting with the December 1990 issue.

12[65-06]—*Proceedings of the Third International Conference on Spectral and High Order Methods*, Andrew V. Ilin and L. Ridgeway Scott (Editors), Houston Journal of Mathematics, Houston, Texas, 1996, viii+613 pp., $27\frac{1}{2}$ cm, softcover, $49.00

This is the third volume of proceedings from an ongoing series of conferences, held every third year so far, devoted to the subject of "Spectral and High Order Methods". The volume is divided into overlapping "chapters" devoted to spectral methods, finite elements, spectral elements, finite differences, domain decomposition, *h-p* methods, multigrid methods, and parallel computations.

In brief, these proceedings mirror the general landscape of computation but with added emphasis on higher order methods. Many numerical analysts, including myself, hold it as an "article of faith" that higher order (stable) methods are "better" than low order methods even in nonsmooth problems where the "higher order" will not come through; at the least they are not "worse". Some of the articles here substantiate this "article of faith".

LARS B. WAHLBIN

13[53-01, 06Y25, 68U05]—*An introduction to computational geometry for curves and surfaces*, by Alan Davies and Philip Samuels, Oxford University Press, New York, NY, 1996, viii+205 pp., 24 cm, hardcover, $35.95

The problem of how to design, store, manipulate, and display curves and surfaces with a digital computer has become of increasing importance in recent years, and there are several books (and many proceedings volumes) on the subject. This book provides a novel introduction which may be especially useful to students and beginners.

The book is divided into two parts. The first four chapters deal with the differential geometry of curves and surfaces. They treat the standard topics of parametrizations, curvature, torsion, Frenet frames, envelopes, fundamental forms, geodesics, and the Dupin indicatrix. The Weingarten matrix and the Gauss map are also dealt with.

The second four chapters discuss many of the standard ways of dealing with curves and surfaces. For curves these include Lagrange and Hermite interpolation, cubic splines, Bezier and Ferguson curves, NURBS, and composite curves. For surfaces, they include Coons, bicubic, Bezier, rational, tensor product, and spline patches. The book concludes with a very limited bibliography.