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2.5.2. The De Boor algorithm for B-splines2.5.3. B-spline surfaces and natural neighboring; 2.5.3.1. Some definitions; 2.5.3.2. Surface properties; 2.5.3.3. The case of repeated nodes; Chapter 3. Numerical Aspects; 3.1. Searching for natural neighbors; 3.2. Calculation of NEM shape functions of the Sibson type; 3.2.1. Stage-1: insertion of point x in the existing constrained Voronoi diagram(CVD); 3.2.1.1. Look for a tetrahedron which contains point x; 3.2.1.2. Note concerning the problem of flat tetrahedrons; 3.2.2. Stage-2: calculation of the volume measurement common to cx and cv
3.2.2.1. By the recursive Lasserre algorithm3.2.2.2. By means of a complementary volume; 3.2.2.3. By topological approach based on the CVD; 3.2.2.4. By topological approach based on the Constrained Delaunay tetrahedization(CDT); 3.2.2.5. Using the Watson algorithm; 3.2.3. Comparative test of the various algorithms; 3.3. Numerical integration; 3.3.1. Decomposition of shape function supports; 3.3.2. Stabilized nodal integration; 3.3.3. Discussion in connection with various quadratures; 3.3.3.1. 2D patch test with a technique of decomposition of shape function supports
3.3.3.2. 2D patch test with stabilized nodal integration3.3.3.3. 3D patch tests; 3.4. NEM on an octree structure; 3.4.1. Structure of the data; 3.4.1.1. Description of the geometry; 3.4.1.2. Interpolation on a quadtree; 3.4.1.3. Numerical integration; 3.4.2. Application of the boundary conditions - interface conditions; 3.4.2.1. Dirichlet-type boundary conditions: use of R-functions; 3.4.2.2. Neumann-type boundary conditions; 3.4.2.3. Partition of unity method; Chapter 4. Applications in the Mechanics of Structures and Processes; 4.1. Two- and three-dimensional elasticity
4.2. Indicators and estimators of error: adaptivity

Sommario/riassunto

"This book presents a recent state of the art on the foundations and applications of the meshless natural element method in computational mechanics, including structural mechanics and material forming processes involving solids and Newtonian and non-Newtonian fluids"--