

Computational Geometry of Surfaces and Its Application to the Finite Element Analysis of Shells

By Olga Axenenko, Alexander Tsvelikh



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Element Analysis of Shells By Olga Axenenko, Alexander Tsvelikh The book is devoted to two subjects representing some of the most challenging areas of computational methods of differential geometry and mechanics of shells; it also includes a CD-ROM with complete source codes (over 20,000 lines) in C/C++, ready to be compiled and used. (1) A new method is presented, allowing construction of the lines of principal curvature on arbitrarily complex curved surfaces. The authors explain in detail the developed algorithms and their implementation. (2) The book describes application of the developed algorithms to the Finite Element Analysis of thin shells, allowing to obtain high-quality numerical results, especially for the displacements and for the components of the stress tensor. All source codes are well commented. The book also includes several examples with known analytical solutions. The developed codes deliver solutions demonstrating excellent correspondence between the analytical and numerical results. This book is also available in hardcover (listed separately).

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