

Cones in ANSYS Fluent with the usage of two different methods for constructing a computational grid

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In this paper, an attempt has been made to compare the results of numerical simulation of supersonic flow around a blunted cone on hexahedral structured and tetrahedral unstructured grids in the ANSYS Fluent package. The construction of grids was carried out in the ANSYS ICEM CFD package. For both variants of calculations, the turbulence model of Spalart and Allmaras (SA) was used. The calculated values of the distributed and integral characteristics obtained as a result of simulation on the two types of grids are correlated with a sufficient degree of accuracy with the results of physical experiments conducted at Zhukovsky Central AeroHydrodynamic Institute (TsAGI), as well as with well-established empirical dependencies. According to the results of the work done, conclusions were made about the advantages and disadvantages of the types of grids considered. Recommendations are given for the more advantageous use of structured grids in aerodynamic problems.

Keywords: aerodynamic characteristics, ANSYS Fluent, structured grid, unstructured grid, shock wave

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