

# **HIGH-ORDER PROJECTION-CHARACTERISTIC METHOD FOR NUMERICAL SOLVING OF THE TRANSPORT EQUATION ON TETRAHEDRA**

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A third-order approximation method on a tetrahedron grid is proposed, based on: A) the use of an orthogonal projector; B) the characteristic form of the solution of the transfer equation. Estimates of the accuracy of the numerical solution have been established. Test calculations confirming the theoretical order of convergence have been carried out. A multithreaded cell bypass parallelization algorithm based on graph theory has been proposed. A significant acceleration of the calculation has been achieved. The transition to the projection version of the method allowed to introduce parallelization.

The basic scheme is a one-dimensional method based on Hermitian interpolation. Its direct implementation to tetrahedra was associated with a loss of accuracy when the characteristic almost lay in the plane of the face. The transition from interpolation operators to projection ones avoided this difficulty. Note that in the proposed method, as well as, for example, in the discontinuous Galerkin method, the continuity of the numerical solution between adjacent faces of the grid is not required, which makes it possible to better take into account the essentially discontinuous nature of the solution of the transport equation. The third order of convergence is theoretically and practically proved.