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Application of vector finite elements for calculation of eddy currents in conducting nonmagnetic shells.

The application of integro-differential equations for calculating variable electromagnetic fields and eddy currents in thin-walled conductive shells is considered. Approximation of the current density distribution in the shell is performed using vector finite elements. The choice of a basis of independent variables is carried out in such a way that the solution obtained automatically satisfies one of the necessary conditions – the divergence of the current density is equal to zero. The reliability of the obtained numerical results, as well as the comparison of the accuracy of the results obtained with the use of various algorithms, are verified by the solution of a test task for which an analytical solution is obtained.