ASYMPTOTICS OF A SOLUTION OF THE SECOND BOUNDARY VALUE PROBLEM FOR THE LAPLACE EQUATION OUTSIDE A SMALL NEIGHBORHOOD OF A SEGMENT

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We construct and validate an asymptotic expansion of a solution of the exterior Neumann problem for the Laplace equation outside a small neighborhood of a segment. The width of the neighborhood is characterized by a small parameter. A physical interpretation of the solution is the two-dimensional velocity potential of an ideal fluid in the case of a laminar flow across a thin body.

Keywords: boundary value problem, Laplace equation, asymptotic expansion, matching method, laminar stream, ideal fluid.

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