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ABSTRACTS

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Boundary-value problems with initial jumps for singularly perturbed integro-differential equations

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Equations containing small parameters in the highest derivatives are now called singularly perturbed. This paper considers the asymptotic behavior of the solution of a two-point boundary value problems for a singularly perturbed integro-differential equations of Fredholm type, when the derivatives of the solution at the initial point becomes infinitely large for a sufficiently small value of the parameter. A characteristic feature of such problems is that the solution of a singularly perturbed problem tends to the solution of the degenerate equation with modified conditions when the small parameter tends to zero. In this case we say that there is a phenomenon of the initial jump. First problem of this type, which is called the problem with the initial jump for a nonlinear ordinary differential equation of the second order was studied by M.I. Vishik, L.A. Lyusternik [1] in the case of power growth and by K.A. Kasymov [2] in the case of exponential growth. The most common cases of the Cauchy problem with initial jumps for singularly perturbed nonlinear systems of ordinary and integro-differential equations, and partial differential equations of hyperbolic type was studied by K.A. Kasymov [2-4].

References

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