

论文

# ANALYSIS OF BOUNDARY LAYER SINGULARITY OF A HYPERBOLIC EQUATION

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**摘要** Using the interpolation theory of a family of linear operators and the Sobolev spaces, we introduce a quantity  $J_{\infty}^{-4}(\lambda)$  which depicts the shape of the boundary layer, and then analyze the boundary singularity of  $J_{\infty}^{-4}(\lambda)$ . Our result shows that the thickness of the boundary layer (or the regular region of  $J_{\infty}^{-4}(\lambda)$ ) is intrinsically related to the reciprocal of the order of the equation; the loss of boundary conditions between the singular solution and the limit solution does not influence the thickness of the boundary layer, but it influences the process of increasing singularity of  $J_{\infty}^{-4}(\lambda)$ ; the more the loss of boundary conditions, the smaller the region of increasing singularity. Finally, we give a definition of a neighborhood of sudden change and propose an open problem regarding this neighborhood.

**关键词** [The interpolation theory, the interior es](#)

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**Key words** [The interpolation theory](#) [the interior estimate](#) [the boundary layer singularity](#) [the neighborhood of su](#)

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