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摘要

关键词 [Asymptotic approximation](#) [Jacobi function](#) [Zero](#) [Error bounds](#)

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## Asymptotic Approximation of Jacobi Functions and Their Zeros with Error Bounds

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**Abstract** The study of zeros of orthogonal functions is an important topic. In this paper, by improving the middle variable  $x(t)$ , we've got a new form of asymptotic approximation, completed with error bounds, it is constructed for the Jacobi functions  $\varphi_{\mu}^{(\alpha, \beta)}(t) (\alpha > -1)$  as  $\mu \rightarrow +\infty$ . Besides, an accurate approximation with error bounds is also constructed correspondingly for the zeros  $t_{\mu, s}$  of  $\varphi_{\mu}^{(\alpha, \beta)}(t) (\alpha \geq 0)$  as  $\mu \rightarrow +\infty$ , uniformly with respect to  $s=1, 2, \dots$ .

**Key words** [Asymptotic approximation](#) [Jacobi function](#) [Zero](#) [Error bounds](#)

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