UNIFORM ASYMPTOTIC EXPANSIONS FOR SOLUTIONS OF THE PARABOLIC CYLINDER AND WEBER EQUATIONS

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Abstract. Asymptotic expansions are derived for solutions of the parabolic cylinder and Weber differential equations. In addition the inhomogeneous versions of the equations are considered, for the case of polynomial forcing terms. The expansions involve exponential, Airy and Scorer functions and slowly varying analytic coefficient functions involving simple coefficients. The approximations are uniformly valid for large values of the parameter and unbounded real and complex values of the argument. Explicit and readily computable error bounds are either furnished or available for all approximations.


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REFERENCES


