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Uniform asymptotic expansion of Legendre functions. (English) [Zbl 1454.33008]


Summary: We find the large number asymptotics of the Legendre functions $P_n(\cos \theta)$ and $Q_n(\cos \theta)$ uniform in $0 \leq \theta \leq \pi$ by reducing the procedure to regular perturbations. The corresponding results for the associated functions $P_n^m(\cos \theta)$ and $Q_n^m(\cos \theta)$ are also discussed.

MSC:

33C45 Orthogonal polynomials and functions of hypergeometric type (Jacobi, Laguerre, Hermite, Askey scheme, etc.)

41A60 Asymptotic approximations, asymptotic expansions (steepest descent, etc.)

Full Text: DOI

References:


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