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Perturbation simulations of rounding errors in the evaluation of Chebyshev series. (English)  
Zbl 0967.68176

Summary: This paper presents some numerical simulations of rounding errors produced during evaluation of Chebyshev series. The simulations are based on perturbation theory and use recent software called AQUARELS. They give more precise results than the theoretical bounds (the difference is of some orders of magnitude). The paper concludes by confirming theoretical results on the increment of the error at the end of the interval [−1;1] and the increased performance achieved by some modifications to Clenshaw’s algorithm near those points.

MSC:
68W30 Symbolic computation and algebraic computation

Keywords:
AQUARELS; Clenshaw’s algorithm

Software:
AQUARELS

Full Text: Link