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**Error analysis and determination of the scaling constant for the scaling power method.**  
(Chinese) [Zbl 0647.65031](#)  
*Acta Math. Appl. Sin.* 10, No. 4, 491-497 (1987).

The scaling power method discussed intensively by *R. C. Ward* [*SIAM J. numer. Anal.* 14, 600-610 (1977; [Zbl 0363.65031](#))] is one of the most efficient methods for computing the matrix exponential  $e^{At}$  which is implemented through converting  $e^{At}$  into  $[e^{At/N}]^N$ . In this paper, an appropriate chosen interval for  $N$  is given. A skip product method to overcome the difficulty of huge amount of computation and the error analysis of the method are advanced. A numerical example of an ill-conditioned differential equation with the rigidity ratio  $10^6$  is included.

Reviewer: [Wang Chengshu](#)

**MSC:**

65F30 Other matrix algorithms (MSC2010)  
65L05 Numerical methods for initial value problems

**Keywords:**

scaling power method; matrix exponential; skip product method; error analysis; numerical example; ill-conditioned differential equation