

[Loginov, A. A.](#)

**A program for the computation of the matrix exponential function using the diagonal Padé approximation.** (Russian) [Zbl 0554.41001](#)

Degenerate systems of ordinary differential equations, Collect. Artic., Novosibirsk 1982, 91-97 (1982).

[For the entire collection see [Zbl 0511.00015](#).]

An ALGOL program for the computation of the matrix exponential function  $\exp(A) = \sum_{k=0}^{\infty} A^k/k!$  is given, where  $A$  is a constant finite-dimensional matrix with real elements. The problem is reduced to the computation of the diagonal Padé approximants by using *R. Ward's* idea [SIAM J. Numer. Anal. 14, 600-610 (1977; [Zbl 0363.65031](#))]. A modification of this idea is presented.

Reviewer: [G.L.Litvinov](#)

**MSC:**

- [41-04](#) Software, source code, etc. for problems pertaining to approximations and expansions
- [41A21](#) Padé approximation
- [65F30](#) Other matrix algorithms (MSC2010)
- [65D15](#) Algorithms for approximation of functions
- [41A20](#) Approximation by rational functions
- [65-04](#) Software, source code, etc. for problems pertaining to numerical analysis