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**Asymptotic solutions of strongly nonlinear systems of differential equations.** Transl. of the 2nd Russian original edition by Lester J. Senechal. (English) [Zbl 1322.34003](#)

Springer Monographs in Mathematics. Berlin: Springer (ISBN 978-3-642-33816-8/hbk; 978-3-642-33817-5/ebook). xix, 262 p. (2013).

Publisher's description: The book is dedicated to the construction of particular solutions of systems of ordinary differential equations in the form of series that are analogous to those used in Lyapunov's first method. A prominent place is given to asymptotic solutions that tend to an equilibrium position, especially in the strongly nonlinear case, where the existence of such solutions can't be inferred on the basis of the first approximation alone.

The book is illustrated with a large number of concrete examples of systems in which the presence of a particular solution of a certain class is related to special properties of the system's dynamic behavior. It is a book for students and specialists who work with dynamical systems in the fields of mechanics, mathematics, and theoretical physics.

A review of the corresponding Russian original edition is available in [\[Zbl 0949.34003\]](#).

**MSC:**

[34-02](#) Research exposition (monographs, survey articles) pertaining to ordinary differential equations

[34E05](#) Asymptotic expansions of solutions to ordinary differential equations

[34A25](#) Analytical theory of ordinary differential equations: series, transformations, transforms, operational calculus, etc.

[34D05](#) Asymptotic properties of solutions to ordinary differential equations

[34D20](#) Stability of solutions to ordinary differential equations

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