

[Nayfeh, Ali Hasan](#)

**Perturbation methods. Reprint of the 1973 original.** (English) Zbl 0995.35001  
Wiley Classics Library. New York, NY: Wiley. xii, 425 p. (2000).

The book is a reprint of the 1973 original edition. This classical monograph was translated into many languages, in particular, in Russian in 1976. Entire generations of experts in the field of asymptotical mathematics, including the author of present review, had used Nayfeh's book as textbook as well as handbook.

The book includes the following chapters: introduction (general information concerning asymptotic expansions); straightforward expansions and sources of nonuniformity; the method of strained coordinates; the method of matched and asymptotic expansions; variation of parameters and method of averaging, the method of multiple scales; asymptotic solutions of linear equations (WKB approximation and its generalizations).

During the last 29 years a lot of fresh results were obtained, but classical approaches change very slowly. This reader-friendly and good-organised book may be used as introductory course in the field of asymptotic approaches. It can be highly recommended for students, engineers, and experts in various branches of science.

Reviewer: [Igor Andrianov \(Köln\)](#)

**MSC:**

- [35-02](#) Research exposition (monographs, survey articles) pertaining to partial differential equations
- [35B20](#) Perturbations in context of PDEs
- [35B25](#) Singular perturbations in context of PDEs

Cited in **2** Reviews  
Cited in **83** Documents

**Keywords:**

[boundary layer](#); [WKB approximation](#); [strained coordinates](#); [matched and asymptotic expansions](#); [averaging](#); [multiple scales](#)