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Numerical and Asymptotic Techniques in Electromagnetics ...

Asymptotic formulas and numerical estimations for eigenvalues of SturmLiouville problems having singular potential functions, with Dirichlet boundary conditions, are obtained. is study gives a comparison between the eigenvalues obtained by the asymptotic and the numerical methods. 1. Introduction Let be an operator generated in 2 [0,1] by the ...

Research Article Asymptotic and Numerical Methods in ...

Before fully 3D numerical techniques became available and practical, one had to resort to asymptotic methods for the calculation of synthetic seismograms. Over the years, numerous asymptotic methods have been – and are continuing to be – developed.

Asymptotic Method - an overview | ScienceDirect Topics

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Asymptotic and numerical homogenization methods applied to ...

Numerical and asymptotic techniques in electromagnetics Mittra, R. Abstract. The book treats the use of computer techniques in the solution of electromagnetic scattering and radiation problems, and the application of physical optics and geometrical optics (including ray tracing) techniques in high-frequency electromagnetics. Major focus is on ...

Numerical and asymptotic techniques in electromagnetics ...
The hybrid numerical-asymptotic (HNA) approach is a general methodology for scat- tering problems which aims to fuse conventional numerical methods with high-frequency asymptotics to create algorithms that are controllably accurate and computationally feasi-

Numerical and asymptotic methods for scattering by ...
8. Conclusions. In this paper we have considered asymptotic, numerical and approximate techniques for the one-dimensional free boundary problem , , , , which arises in the diffusion of glassy polymers. We provide an accurate numerical scheme which is also easy to implement, and a complete asymptotic analysis in the limits $t \to 0+$, $t \to \infty$ and $\lambda \to \infty$.

Asymptotic, numerical and approximate techniques for a ...
The methods, explained in great detail, will obtain asymptotic approximations of the well-known special functions of mathematical physics and probability theory.

(PDF) Asymptotic Methods for Integrals
Numerical computations historically play a crucial role in natural sciences and engineering. ... This kind of work requires a general understanding of basic numerical methods, their strengths and weaknesses, ... the condition of asymptotic stability can be phrased at the solution of the true continuous time equation is monotonically decreasing.

Asymptotic stability of ODEs. Stiffness. - Initial value ...
Among the methods used for CEM, for example, are integral-equation solvers, differential-equation (DE) solvers, asymptotic techniques, and other numerical methods (Fig. 1). In the top EM simulation software, which uses integral-equation solving techniques, the methods of moments (MOM) and multilevel fast multipole method (MLFMM) are commonly used.

What Are the Differences between Various EM-Simulation ...
asymptotic methods or numerical methods have to be used. Daniels' (1954) saddlepoint expansion for the density function and Lugannani and Rice's (1980) expansion for the cumulative distribution function are amongst the most widely used asymptotic methods. Although the integrated saddlepoint expansion is generally considered

Asymptotic and numerical methods for approximating ...
In this work, we perform a complete asymptotic analysis and the construction of affordable quadrature rules for a class of oscillatory infinite Bessel transform with a general oscillator. Especially in the presence of critical points, e.g., endpoints, zeros and stationary points, we first derive a series of useful asymptotic expansions in inverse powers of the frequency parameter $$\omega $$.

Asymptotic Analysis and Numerical Methods for Oscillatory ...
Waveguides: asymptotic methods and numerical analysis During last decades, models of waveguides attracted much attention by physicists, mathematicians and engineers. This was motivated by many interesting mathematical questions and by the progress in different fields of physics (semiconductor physics, optics, acoustics, water waves, elasticity...).

Waveguides: asymptotic methods and numerical analysis ...
NUMERICAL AND ASYMPTOTIC TECHNIQUES IN ELECTROMAGNETICS (TOPICS IN APPLIED PHYSICS ; V. 3) By Raj Mittra - Hardcover *Excellent

Condition*.

NUMERICAL AND ASYMPTOTIC TECHNIQUES IN ELECTROMAGNETICS By ...
Asymptotic formulas and numerical estimations for eigenvalues of SturmLiouville problems having singular potential functions, with Dirichlet boundary conditions, are obtained. This study gives a comparison between the eigenvalues obtained by the asymptotic and the numerical methods.

Asymptotic and Numerical Methods in Estimating Eigenvalues
In essence there are two main types of approximation: analytical approximations and numerical approximations. This module deals with the first type; the Numerical Methods module deals with the second. Topics. Asymptotic methods for differential equations, including the methods of multiple scales and matched asymptotics (lectures 1 to 5; ...

Asymptotic and Analytical Methods - SMSTC
Hybrid numerical-asymptotic methods have been shown in theory to be substantially more e cient than classical numerical methods alone. For example, [40] presented a hybrid numerical-asymptotic method in the context of boundary integral equations (BIEs) for solving the problem of high-frequency scattering by smooth, convex obstacles in two ...

Asymptotic and Numerical methods for high-frequency ...
Asymptotic methods for ODEs [5 lectures] I Dr David Pritchard (Strathclyde) and Prof. Alan Hood (St Andrews). Transforms and integral solutions [3 lectures] I Dr Alex Wray and Dr David Pritchard (Strathclyde). Further applications of asymptotics [2 lectures] I Dr David Pritchard (Strathclyde). Numerical methods for stochastic DEs [2 lectures]

Asymptotic and Analytical Methods and Numerical Methods
parameterization, and extension of the asymptotic methods to the interactions between mesoscale and submesoscale dynamics is ongoing. The third investigation concerns the linear stability properties of semi-implicit methods for the numerical integration of ordinary di erential equations, focusing in particular on the linear