

Thesis Variational Method Differential System Arising

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Thesis Variational Method Differential System

A variational model is established for nonlinear electrochemical system by Ji-Huan He's semi-inverse method, leading to some convenience when solving the problem numerically and analytically. View...

Thesis : some application of variational iteration method ...

Approximate solutions of variational problems may be found by solving finite systems of algebraic equations; often algorithms for finding approximate solutions of variational problems are simpler and practically more convenient than the available algorithms for solving the same problems for partial differential equations. The variational method ...

Differential equation, partial, variational methods ...

"The fourth edition of Michael Struwe's book Variational Methods: Applications to Nonlinear Partial Differential Equations and Hamiltonian Systems was published in 2008, 18 years after the first edition. ... The bibliography alone would make it a valuable reference as it contains nearly 500 references. ...

Variational Methods - Applications to Nonlinear Partial ...

38 Variational Iteration Method for Solving Differential Equations with Piecewise Constant Arguments The VIM should be employed by following two main steps. It is required first to determine the Lagrange multiplier λ that can be identified optimally via integration by parts and by using a restricted variation.

Variational Iteration Method for Solving Differential ...

The purpose of this work is to investigate the variational structure under the impulsive differential system . Based on variational method, we introduce a different concept of solution, that is, a weak solution to problem . The critical points of the corresponding functional are indeed weak solutions of the impulsive problem . For the impulsive ...

Variational approach to impulsive differential system ...

In this thesis we investigate nonsmooth classical and continuum mechanics and its discretizations by means of variational numerical and geometric methods. The theory of smooth Lagrangian mechanics is extended to a nonsmooth context appropriate for collisions and it is shown in what sense the system is symplectic and satisfies

Variational Methods for Nonsmooth Mechanics

Abstract In this paper, using a model transformation approach a system of linear delay differential equations (DDEs) with multiple delays is converted to a non-delayed initial value problem. The...

(PDF) Variational Iteration Method for Solving Systems of ...

The variational iteration method is an efficient method for solving various kinds of problems. In this paper, we have suggested a modification of this method which is called "revised variational iteration method.". We employ the revised VIM for solving a systems of nonlinear fractional-order differential equations.

Revised Variational Iteration Method for Solving Systems ...

Abstract: Variational integrators are a special kind of geometric discretisation methods applicable to any system of differential equations that obeys a Lagrangian formulation. In this thesis, variational integrators are developed for several important models of plasma physics: guiding centre dynamics (particle dynamics), the Vlasov-Poisson system (kinetic theory), and ideal magnetohydrodynamics (plasma fluid theory).

[1307.5665] Variational Integrators in Plasma Physics

M.P. Dainton - Numerical methods for the solution of systems of uncertain differential equations with application in numerical modelling of oil recovery from underground reservoirs. M.H. Mawson - The shallow-water semi-geostrophic equations on the sphere.. 1993. S.M. Stringer - The use of robust observers in the simulation of gas supply networks.

PhD theses from the department of ... - University of Reading

VARIATIONAL METHODS FOR NONLINEAR PARTIAL DIFFERENTIAL EQUATIONS By CARLOS TELLO A Thesis Submitted to the Graduate Faculty of WAKE FOREST UNIVERSITY in Partial Fulfillment of the Requirements for the Degree of MASTER OF ARTS Mathematics December 2010 Winston-Salem, North Carolina Approved By: Sarah Raynor, Ph.D., Advisor Stephen B. Robinson, Ph ...

VARIATIONAL METHODS FOR NONLINEAR PARTIAL DIFFERENTIAL ...

In this paper, a new iteration technique is proposed to solve autonomous ordinary differential systems. In this method, general Lagrange multipliers are introduced to construct correction functionals for the systems. The multipliers in the functionals can be identified by the variational theory. The initial approximations can be freely chosen with possible unknown constants, which can be determined by imposing the boundary/initial conditions.

Variational iteration method for autonomous ordinary ...

The branch of mathematics in which one studies methods for obtaining extrema of functionals which depend on the choice of one or several functions subject to constraints of various kinds (phase, differential, integral, etc.) imposed on these functions. This is the framework of the problems which are still known as problems of classical variational calculus.

Variational calculus - Encyclopedia of Mathematics

Abstract: In this paper, we study the periodic orbits of a type of odd order differential delay system with $2k + 1$ lags via the S index theory and the variational method. This type of system has not been studied by others. Our results provide a new and more accurate method for counting the number of periodic orbits.

On the Number of Periodic Orbits to Odd Order Differential ...

provide a convenient, alternative method for finding solutions. Two such methods, the Rayleigh-Ritz method and the Galerkin method, are typically used in the literature and are referred to as classical variational methods. According to Reddy (1993), when solving a differential equation by a variational method,

Chapter 3 Classical Variational Methods and the Finite ...

Differential equations are among the most important mathematical tools used in producing models in the physical sciences, biological sciences, and engineering. In this text, we consider numerical methods for solving ordinary differential equations, that is, those differential equations that have only one independent variable.

NUMERICAL SOLUTION OF ORDINARY DIFFERENTIAL EQUATIONS

The Stochastic Variational Method (SVM) is a powerful way of numerically calculating bound-state energies for few-body systems. It has, however, never been used in momentum representation. Recent advances using Similarity Renormalization Group (SRG) methods allow inter-nucleon potentials to be evolved, in momentum representation, into a form that

Using the Stochastic Variational Method in Momentum ...

In this paper, the homotopy analysis method (HAM) is applied to obtain series solutions to linear and nonlinear systems of first- and second-order partial differential equations (PDEs). The HAM solutions contain an auxiliary parameter which provides a convenient way of controlling the convergence region of series solutions.

Approximate analytical solutions of systems of PDEs by ...

One technique, called the Variational Method, is an approximate but accurate way to solve the nonlinear Schrodinger equation in closed form. This method is exploited throughout this thesis to study the pulse properties in a nonlinear dispersive fiber, and to explore ways to compensate dispersion for both single link and concatenated link systems.

Variational Calculation of Optimum Dispersion Compensation ...

variational methods [19], [39], [84], [108] represent in many cases, an effective tool in obtaining the solution of the ... Solving the differential equations using the variational methods consists in the replacement of the unknown ... Following the application algorithm of the method described in the thesis, it is noted that the formulation of

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