

CHAPTER 29

MATHEMATICAL SCIENCES MATHEMATICS

Doctoral Theses

274. KHOSLA (Noopur)
Highly Accurate Variable Mesh Two Parameter Alternating Group Explicit Methods For the Solution of Boundary Value Problems.
Supervisor : Dr. R. K. Mohanty
Th 14734

Abstract

An introduction and review of linear matrix algebra and various iterative methods along with its convergence for the solution of linear and non-linear system of equations are given. Using three grid points, derive a third order accurate variable mesh numerical method for the solution of general non-linear second order ordinary differential equation subject to essential boundary conditions. Also discusses the application of two parameter alternating group explicit(TAGE) and Newton-Tage iteration methods along with its convergence to solve both linear and non-linear difference equations. Report a new third order non-uniform mesh cubic spline method and the application of two parameter alternating group explicit method for the solution of non-linear singular two point boundary value problems. The proposed method is applicable to problems both in cylindrical and spherical polar coordinates. Using three grid points, we discuss a new third order accurate arithmetic average variable mesh method for the solution of two point boundary value problems subject to natural boundary conditions. The proposed method is applicable to both singular and non-singular problems. Proposes a new nine-point finite difference discretization strategy of order four, which is based on the arithmetic average discretization technique, to solve the two dimensional elliptic partial differential equations in polar coordinates subject to dirichlet boundary conditions. Gives a three point third order variable mesh finite difference discretization for the solution of non-linear boundary value problems subject to linear mixed boundary conditions are prescribed at both ends. Application and error analysis for TAGE iterative method is also discussed.

1. Mathematical background of matrix iterative analysis. 2. A third order accurate variable mesh tage iterative method for the numerical solution of two point non-linear singular boundary value problems. 3. An $O(h^3k)$ non-uniform mesh cubic spline tage method for the two point non-linear singular boundary value problems. 4. Application of tage iterative algorithms to an efficient third order arithmetic average variable mesh discretization for two-point non-linear boundary value problems. 5. Arithmetic average discretization and the application of blage iterative method for the solution of two dimensional elliptic partial differential equations. 6. Variable mesh tage iterative methods for non-linear two point boundary value problems with mixed boundary conditions. 7. Conclusion and Bibliography.

275. LAXMI NARAIN
Special Models in Flowshop Sequencing Problems.
 Supervisor : Dr. P. C. Bagga
 Th 14733

Abstract

Studies some sequencing problems, commonly known in literature as 'Flowshop sequencing problems'. The aim is to determine the optimal sequence, i.e., order in which jobs should be processed in certain flowshop scheduling models where the optimization criteria are: (i) minimization of the total rental cost. (ii) minimization of the total elapsed time. (iii) minization of the total flow-time. (iv) minimization of one criterion subject to minimization of the other criterion, i.e., minimization of bi-criteria. Various special cases with restrictions on processing times have also been considered.

Contents

1. Introduction. 2. Minimizing rental cost under rental policy. 3. Scheduling under restrictive conditions: Minimization of total rental cost. 4. Flowshop no-idle scheduling: Minimization of total elapsed time. 5. Scheduling under restrictive conditions: Minimization of total flow-time. 6. Minimizing total elapsed time: Under un-availability constraint. Bibliography.

M.Phil Dissertations

276. AGGARWAL (Anu)
Arens Regularity of Certain Banach Algebras.
Supervisor : Prof. Ajay Kumar
277. BHOLA (Jyoti)
Study of Essentially Hermitian Operator
Supervisor : Prof. Dinesh Singh
278. DHALL (Deepika)
Fourth Order Numerical Solutions of Non-Linear Elliptic and Hyperbolic Partial Differential Equations by Finite Difference Method.
Supervisor : Dr. R. K. Mohanty
279. SANTOSH KUMARI
On Certain Properties of Lorentz Spaces.
Supervisor : Prof. P. K. Jain
280. SINGHAL (Sandhya)
Symmetry and Wiener Property of Weighted Group Algebras.
Supervisor : Prof. Ajay Kumar
281. SHARMA (Shalu)
Study of Gabor Frames.
Supervisor : Prof. P. K. Jain
282. CHAWLA (Malti)
Study of Generalized Fredholm Operators.
Supervisor : Prof. S. C. Arora
283. PRASAD (Sadamand)
Evolutionary Behaviour of Certain Non-linear Systems.
Supervisor : Dr. L. M. Saha
284. KAKKAR (Dhista)
Error Protection Codes.
Supervisor : Prof. B.K. Das