



Miranda House

UNIVERSITY OF DELHI

Name: Dr. Jyoti Talwar

Department: Mathematics

Current Designation: Assistant Professor

Email id: jyoti.talwar@mirandahouse.ac.in

Academic Qualifications: M.Sc. (Mathematics) in 2004, IIT Delhi
B.Sc.(H) (Mathematics) in 2002, Maitreyi College, University of Delhi

Research Degree(s): Ph.D. (Mathematics) in 2015 under the guidance of Prof. R. K. Mohanty and Dr. Swarn Singh

Topic of Research: Alternating Group Explicit Methods for the solution of Non-linear differential equations

M.Phil. (Mathematics) in 2010 under the guidance of Prof. R. K. Mohanty

Topic of Research: Alternating Group Explicit Methods for the solution of Non-linear differential equations

Field of Specialization under the Subject/Discipline: Numerical Analysis

Total Teaching Experience: 8 years

Teaching at Miranda House since: 1st August 2015

List of Publications:

Jyoti Talwar, R.K. Mohanty, Swarn Singh, A new algorithm based on spline in tension approximation for 1D quasi-linear parabolic equations on a variable mesh, International Journal of Computer Mathematics, 93:10, 1771-1786, (2016), DOI: 10.1080/00207160.2015.1074682



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Jyoti Talwar, R.K. Mohanty, A New Coupled Reduced Alternating Group Explicit Method for Non-linear Singular Two Point Boundary Value Problems on a Variable Mesh”, Sibirskii Zhurnal Vychislitel’noi Matematiki (Numerical Analysis and Applications), 8: 55-67, (2015)

Jyoti Talwar, R.K. Mohanty, Spline in Tension method for Non-linear Two Point Boundary Value Problems on a Geometric Mesh. МАТЕМАТИЧЕСКОЕ МОДЕЛИРОВАНИЕ (Mathematical Models and Computer Simulations). 27: pages 33-48, (2015).

R.K. Mohanty, **Jyoti Talwar**, A New Compact Alternating Group Explicit Iteration Method for the Solution of Nonlinear Time-Dependent Viscous Burgers’ Equation, Numerical Analysis and Applications, vol. 8 (4), pages 314-328, (2015).

Jyoti Talwar, R.K. Mohanty, Coupled Reduced Alternating Group Explicit Algorithm for Third Order Cubic Spline Method on a Non-uniform Mesh for Nonlinear Singular Two Point Boundary Value Problems, Proceedings of the National Academy of Sciences, India Section A: Physical Sciences, Vol. 85(1), pages 71-81, March (2015).

Jyoti Talwar, R.K. Mohanty, Swarn Singh, A New Spline in Compression Approximation for One Space Dimensional Quasilinear Parabolic Equations on a Variable Mesh, Applied Mathematics and Computation, vol. 260, pages 82-96, (2015).

Jyoti Talwar, R.K. Mohanty, A Single Sweep AGE Algorithm based on Off-Step Discretization for the Solution of Viscous Burgers’ Equation on a Variable Mesh, Mathematics in Computer Science, vol. 9, pages 85-103, (2015).

Jyoti Talwar, R.K. Mohanty, A New Modified Group Explicit Iterative Method for the Numerical Solution of Time Dependent Viscous Burgers' Equation, International Journal of Modeling, Simulation, and Scientific Computing, vol. 5(2), 1350029(18 pages), (2014). doi: 10.1142/S1793962313500293

R.K. Mohanty, **Jyoti Talwar**, SWAGE Algorithm for the Cubic Spline Solution of Nonlinear Viscous Burgers’ Equation on a Geometric Mesh, Results in Physics, vol. 3, pages 195-204, (2013).

Jyoti Talwar, R.K. Mohanty, Spline in Compression Method for Non-linear Two Point Boundary Value Problems on a Geometric Mesh, Neural, Parallel, and Scientific Computations, vol. 21, pages 553-570, (2013).

R.K. Mohanty, **Jyoti Talwar**, A combined approach using coupled reduced alternating group explicit (CRAGE) algorithm and sixth order off-step discretization for the solution of two point nonlinear boundary value problems, Applied Mathematics and Computation, vol. 219, pages 248-259, (2012). doi: 10.1016/j.amc.2012.06.014

Jyoti Talwar, R.K. Mohanty, Smart Alternating Group Explicit Method (SMAGE) for the Cubic Spline Solution of Non-Linear Two Point Boundary Value Problems, Neural, Parallel,



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and Scientific Computations, vol. 20, pages 399-414, (2012).

R. K. Mohanty, **Jyoti Talwar**, Compact alternating group explicit method for the cubic spline solution of two point boundary value problems with significant nonlinear first derivative terms, *Mathematical Sciences*, vol. 6:58, (2012). doi:10.1186/2251-7456-6-58

R.K. Mohanty, **Jyoti Talwar**, Noopur Khosla, 'Application of TAGE Iterative Methods for the Solution of Non-linear Two Point Boundary Value Problems with Linear Mixed Boundary Conditions on a Non-Uniform Mesh', *International Journal for Computational Methods in Engineering Science and Mechanics*, vol. 13, Issue 3, pages 129-134, (2012)

Jyoti Talwar, R.K. Mohanty, A Class of Numerical Methods for the Solution of Fourth-Order Ordinary Differential Equations in Polar Coordinates, *Advances in Numerical Analysis*, vol. 2012, Article ID 626419, 20 pages, (2012).

Invited talks/Session chair/Resource person (reverse chronological order):

- Delivered a talk on 'A class of Numerical methods for the solution of fourth order ordinary differential equations in cylindrical and polar coordinates', International Congress on Productivity, Quality, Reliability, Optimization and Modelling, Feb 7-8, 2011.
- Participated and presented the paper 'A class of Numerical methods for the solution of fourth order differential equations in polar coordinates' in National Seminar on Research Scholars, Department of Mathematics, University of Delhi, March 24-25, 2012.

Conferences Organised:

- Organized a two-day Workshop on Calculus: the Geometrical Way!, during 19th -20th September 2019, in association with The Indian Mathematics Consortium at Miranda House, University of Delhi.
- Organized a three-day Workshop on Probability and Statistics using R, during 4th -6th April 2018, in association with The Indian Mathematics Consortium at Miranda House, University of Delhi.



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Seminars/Workshops/Conferences attended:

- Attended the Faculty Development Programme on Advanced Linear Algebra organized by Miranda House in collaboration with Mahatma Hansraj Faculty Development Centre, Hansraj College during 27th Sept -1st Oct 2021.
- Attended the Faculty Development Programme on Applications of Mathematics in Business and Social Sciences organized by Miranda House in collaboration with Mahatma Hansraj Faculty Development Centre, Hansraj College during 18th March – 24th March 2021.
- Attended three week Online Certificate Course: SLC-Course01 on Introduction to Computer Algebra System: Maxima (An Open Source Software) organized by Hansraj College, University of Delhi from 27th June -18th July 2020.
- Participated in the National Webinar on Financial Mathematics: Pedagogy and Career Perspectives, organized by the Dept. of Mathematics, Lady Shri Ram College for Women, University of Delhi from 27th July to 31st July 2020.
- Attended the Faculty Development Programme on Open Source Tools for Research organized by Teaching Learning Centre, Ramanujan College, University of Delhi, during 8th June -14th June 2020.
- Attended the Faculty Development Programme on Managing Online Classes and Co-creating MOOCs:2.0 organized by Teaching Learning Centre, Ramanujan College, University of Delhi, during 18th May -3rd June 2020.
- Participated in 'International Workshop on Numerical Methods in Scientific Computing (IWNMSC-2020)', Feb 21-22, 2020, Department of Mathematics, South Asian University, New Delhi.
- Attended the Refresher Course in Mathematics/ Operational Research/ Statistics and Computer Science conducted by the Centre for Professional Development in Higher Education (CPDHE), UGC-HRDC, University of Delhi, during 31st May 2019 to 14th June 2019.
- Attended the Faculty Development Programme on Biomathematics at Shivaji College, University of Delhi during 1st -7th August 2019
- Participated in the International Workshop on Numerical Methods in Scientific Computing (IWNMSC-2020) held from 21-22 February 2020 at South Asian University, New Delhi.



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- Attended Orientation Course (OR-90), conducted by Centre for Professional Development in Higher Education (CPDHE), UGC-HRDC, University of Delhi, during 21 Nov 2017-19 Dec 2017.
- Participated in 'Advanced workshop on Finite Difference Methods for Differential Equations-2015', March 13-17, 2015, Department of Mathematics, South Asian University, New Delhi.
- Participated in workshop on 'Computational Techniques for Differential Equations with MATLAB', July 02-06, 2015, Department of Mathematics, Indian Institute of Technology Roorkee.
- Participated in 'Indian Women and Mathematics', April 2-4, 2015, Department of Mathematics, University of Delhi.
- Participated in the symposium organized by Department of Mathematics, South Asian University, New Delhi on Discrete Mathematics and Discretization Methods, Oct 25-26, 2013.
- Participated in 'The Legacy of Srinivasa Ramanujan', Dec 17-22, 2012, University of Delhi, Delhi
- Participated and presented the paper 'A class of Numerical methods for the solution of fourth order differential equations in polar coordinates' in National Seminar on Research Scholars, Department of Mathematics, University of Delhi, March 24-25, 2012.
- Selected to participate in 'National Workshop on Differential Equations, Computing and Modeling', Dec 20-24, 2010, University of Delhi, Delhi.
- Selected to participate in 'International Congress on Productivity, Quality, Reliability, Optimization and Modelling', Feb 7-8, 2011.
- Participated in the Workshop on Mathematica, Dec 8 2010, University of Delhi, Delhi
- Participated in 'National Meet on History of Mathematical Sciences', Jan 7-9, 2010, University of Delhi, Delhi.
- Participated in the 'Research Scholars' Seminar', March 18-19, 2010, University of Delhi, Delhi.
- Participated in 'Pre-ICM International Convention on Mathematical Sciences', Dec 18-20, 2008, University of Delhi, Delhi.



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- Participated in the 'Research Scholars' Seminar', Jan 22-23, 2009, University of Delhi, Delhi.