

# CURRICULUM-VITAE

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**Research Objective**

- Numerical Analysis and Scientific Computing.
- Partial differential Equation.

**Research Interest** Computational Partial Differential Equations (PDEs), in particular, Finite Element Galerkin methods and Nonlinear Galerkin Method for PDEs.

**Current Occupation** Assistant Professor in Department of Mathematics, Govt. Womens College, Sambalpur since Sept 2023.

**Education**

- **Ph.D.**  
University : Ravenshaw University  
Class/Year : May, 2017
- **Master of Science (M.Sc.)**  
University : Sambalpur University.  
Subject : Mathematics.  
Class/Year : First (60.17%). 2003
- **Bachelor of Science (B.Sc.)**  
College/University : Utkal University, Bhubaneswar.  
Subject : Mathematics  
Class/Year : Distinction. 2001

**Teaching Experience**

- Assistant Prpfessor, Government Womens College, Sambalpur, Odisha, India (Sept 2023- onwards)
- Associate Professor, Sikhsa O Anusandhan University, Bhubaneswar(Jan 2018 - Sept 2023.)
- Assistant Professor, Sikhsa O Anusandhan University, Bhubaneswar(July 2016 - Jan 2018).
- Assistant Professor, Gandhi Institute For Technological Advancement, Bhubaneswar(May 2007 - July 2016).
- Lecturer, C.V. Raman College Of Engineering, Bhubaneswar (Sep 2005-May 2007).

## Research Experience

- (Research Scholar) Universidade Federal De Parana, Curitiba, Brazil(CNPq Scholarship Aug 2010- July 2012)  
Supervisor: Prof Jin Yun Yuan,Department of Mathematics(PPGMA), UFPR, Curitiba, Brazil.  
During my stay in UFPR, one paper has been submitted to *Applicable Analysis* and I had successfully completed the course work comprising the following 9 advanced level courses:  
Functional Analysis(CM806), Elliptic Partial Differential Equation(CM810), Topics in Numerical Analysis I(CM839), Measure Theory(CM819), Optimization I(CM721), Computational Optimization, Partial Differential Equation(CM841), Numerical Analysis II(CM723) and Topics in Numerical Analysis II(CM840).
- (Research Assistant)Indian Institute Of Technology ,Bombay under the Project(Feb 2004 - Jan 2005)  
Parallel mixed finite element implementation of 4th order elliptic source/eigenvalue problems in distributed memory environments.we had two publications during my stay : on journal publication and one proceeding publication ( cf. lists of publications).  
Supervisor : Prof Neela Nataraj , Department of Mathematics, IIT Bombay, India.

## List of Publications

1. Mishra, S., Khebchareon, M., Pany, A. K., Second order backward difference scheme combined with finite element method for a 2D Sobolev equation with Burgers' type non-linearity, *Computers & Mathematics with Applications*, 2023, 141, 170-190.**IF: 3.476, (SCOPUS/SCI(Q1))**.
2. Mishra, S., Pany, A.K.,Spectral Galerkin finite element method for 2D Sobolev equation with Burgers type non-linearity, *AIP Conference Proceedings*, 2819(1), 2023.**(SCOPUS/SCI)**.
3. Yadav, S., Mishra, S., Pany, A.K., Backward Euler method for 2D Sobolev equation with Burgers type non-linearity, *AIP Conference Proceedings* 2819 (1), 2023.**(SCOPUS/SCI)**.
4. Khebchareon, M., Pany, A.K., Pani, A.K., An  $H^1$ -Galerkin mixed finite element method for identification of time dependent parameters in parabolic problems, *Applied Mathematics and Computation*, 2022, 424, 127045, **IF: 4.091, (SCOPUS/SCI(Q1))**.
5. Danumjaya, P., Pany, A.K., Pani, A.K., Morley FEM for the fourth-order nonlinear reaction-difusion problems, *Computers and Mathematics with Applications*, 2021, Volume 99, Pages 229 - 245. **IF: 3.476, (SCOPUS/SCI(Q1))**.
6. Pany, A.K., Khebchareon, M., Pani, A.K., Negative norm estimates and superconvergence results in Galerkin method for strongly nonlinear parabolic problems,*Computers and Mathematics with Applications*, 2021, Volume 99, Pages 26 - 36,**IF: 3.476, (SCOPUS/SCI(Q1))**.
7. Mishra, S., Pany, A.K., Completely discrete schemes for 2D Sobolev equations with Burgers type nonlinearity, *Numerical Algorithms*, 2021, 10.1007/s11075-021-01218-2,**IF: 3.041, (SCOPUS/SCI(Q1))**.
8. Mishra, B., Pany, A.K., Dutta, S., New Iterative Methods for a Nonlinear System of Equations with Third and Fifth-Order Convergence, *Lecture Notes in Mechanical Engineering*, 2021, pp. 447–458, **(SCOPUS)**.

9. Pany, A.K., Bajpai, S., Mishra, S., Finite element Galerkin method for 2D Sobolev equations with Burgers type nonlinearity, Applied Mathematics and Computation, 2020, 387, 125113, **IF 4.091, (SCOPUS/SCI(Q1))**.
10. Bajpai, S., Pany, A.K., A priori error estimates of fully discrete finite element Galerkin method for Kelvin-Voigt viscoelastic fluid flow model, Computers and Mathematics with Applications, 2019, 78(12), pp. 3872–3895, **IF: 3.476, (SCOPUS/SCI(Q1))**.
11. Pany, A.K., Fully discrete second order backward difference method for Kelvin-Voigt Fluid Flow Model, Numerical Algorithms, 2018, 78(4), pp. 1061–1086, **IF 3.041, (SCOPUS/SCI(Q1))**.
12. Pany, A.K., Kundu, S., Optimal error estimates for semidiscrete Galerkin approximations to multi-dimensional Sobolev equations with Burgers type nonlinearity, Springer Proceedings in Mathematics and Statistics, 2018, 235, pp. 209–227, **(SCOPUS)**.
13. Mishra, B., Pany, A.K., Dutta, S., A New Modified Newton Method use of Haar wavelet for solving Nonlinear equations. (arxiv/1762901)
14. Pany, A.K., Paikray, S.K., Padhy, S., Pani, A.K., Backward Euler Schemes for the Kelvin-Voigt Viscoelastic fluid Flow Model, International Journal of Numerical Analysis and Modeling, 2017, 14(1), 126–151, **IF:0.808,(SCOPUS/SCI(Q2))**.
15. Pany, A.K., Bajpai, S., Pani, A.K., Optimal a priori estimates for semidiscrete Galerkin method for equations of motion arising in Kelvin-Voigt model of viscoelastic fluid flow, Journal of Computational and Applied Mathematics, (2016), 302, 234-257, **IF : 2.621, (SCOPUS/SCI(Q2))**.
16. Pany, A.K., Pany, A.K., Damazio, P., Yuan, J.Y., A Modified Nonlinear Spectral Galerkin Method for the Equations of Motion Arising in the Kelvin-Voigt Fluids, Applicable Analysis, 2014, 93(8), pp. 1587–1610, **IF: 1.429, (SCOPUS/SCI(Q2))**.
17. Pany, A.K., Nataraj, N., Singh, S., A Mixed Finite Element Method for Burgers Equation. Journal of Applied Mathematics and Computing, 2007, 23, 43-55, **IF: 1.686, (SCOPUS/SCI(Q2))**.
18. Pany, A.K., Nataraj, N., A  $H^1$  Galerkin Mixed Finite Element Method for Linear and Nonlinear Parabolic Problem Proc. of the Conference on Differential and Difference Equations and Applications, 851-860 (2006), **(SCOPUS)**.

#### Course Taught

- Discrete Mathematics and Graph Theory. (UG Level as par SOAU Syllabus)
- Functional Analysis (M.Sc)
- Engineering Mathematics I, Engineering Mathematics II, Engineering Mathematics III and Engineering Mathematics IV, Optimization, Numerical Method, Advance numerical Method (UG Level as par BPUT Syllabus)
- Numerical Computation using MATLAB(UG Level).
- Computer Based Numerical Method and Quantitative Technique I, Quantitative Technique II(PG Level).

#### Research Projects/Thesis Supervised.

## Doctoral Thesis

1. S. Mishra, Finite Element Method for Multi Dimensional Sobolev Equation with Burger's type nonlinearity, 2023.
2. G. Saini, Finite Element Methods to Global Stabilization of Sobolev Equation by Feedback Control Law ( With S. Chand) (Continue).
3. B. Sahoo, Two-Grid Finite Element Method for Multi Dimensional Sobolev Equation with Burger's type nonlinearity(Cont.)

## Master Thesis

1. K. Mahanta, Some Newton's Type Iterative Methods to Solve Nonlinear Equations.(2020)
2. S. Dash, Mathematical Modelling On Global Warming and Eect of Carbon Dioxide on Atmosphere.(2020)
3. I. Y. Hasan, On Central Derivation of Nilpotent n-Lie Algebra,(2021)
4. B. K. Barik, An H1 - Galerkin Mixed Finite Element Method for Burger-Hunter Equation, (2022)
5. A. Sahu, A Fifth Order Iterative Methods to Solve Nonlinear equations.(2023)

## Technical Skills

Operating System : Linux, Windows.  
Programming Language : FORTRAN, C and C++.  
Mathematical Software : MATLAB, Freefem++ and Algencan(Optimization)

## Organising a Work-shop/Conference:

- Second International Conference on 'Applied Mathematics in Science and Engineering', Siksha O Anusandhan Deemed To be University, Bhubaneswar, March 24 - 26, 2022.
- International Conference On Numerical Analysis and Differential Equation with its Application, (NADEA - 2019), July 20-22, SOA(Deemed to be University), Bhubaneswar, Orissa, India.
- Meshfree and Multigrid methods Application to PDEs, 27th November, 2018, Organising in Department Of Mathematics, SOA(Deemed to be University), Bhubaneswar, Orissa, India.
- Computational Methods in Science and Engineering (COMISE 2007) Jan 25-31, 2007 organising in C.V.Raman College of Engineering, Bhubaneswar, Orissa, India.

## Conference / Workshop / Summer School

- International Conference on 'Current Trends in Theoretical and Computational Differential Equations with Applications', South Asian University, New Delhi, Dec 01-05, 2017.
- International Conference on 'Recent Advances in PDE: Theory Computations and Application', IITBombay, June 8 - 10, 2017.
- National Conference on 'Advances in Mathematics and its Application', Ravenshaw University, Cuttack, Mar. 31 - April 01, 2017.
- Indo-German Workshop on ' Adaptive Finite Element Methods', Institute of Mathematics and Applications (IMA), Bhubaneswar, Feb. 22 - March 02, 2013.
- UFPR Summer School: Symposium on Numerical Analysis and Optimization held at the University of Federal Parana(Brazil), Feb 21-24, 2011.

- Instructional School for Computational Partial Differential Equations And Hyperbolic System, Indian Institute of Technology Bombay, Mumbai (India), June 22-July 17, 2008.
- Instructional School for Computational Partial Differential Equations, Indian Institute of Technology Bombay, Mumbai (India), June 05-25, 2005.
- Conference on Recent Trends in Nonlinear Analysis and its application, Indian Institute of Technology Bombay, Mumbai (India), December 11-13, 2004.
- Study Group Meeting On Industrial Problems, Indian Institute of Technology Bombay, Mumbai (India), December 06-09, 2004.
- Workshop on Optimization and Risk Modeling, Indian Institute of Technology Bombay, Mumbai (India), December 18-21, 2003.
- International Conference and Instructional Workshop on Industrial Mathematics, Indian Institute of Technology Bombay, Mumbai (India), December 02-09, 2002.
- Mathematics Training And Talent Search, Indian Institute of Technology Bombay, Mumbai (India), May 20- June 16, 2002.

#### Lecture

- Lectures on Introduction to Matlab in the Faculty Development Programme held at the Department of mathematics, C. V. Raman College of Engineering, Bhubaneswar, Odisha, India during Jan 25- Jan 31, 2007.

#### Personal Details

Date of Birth : 15th June, 1981.  
 Marital Status : Married.  
 Nationality : India.

#### Referees

1. **Prof Sudarsan Padhy**  
 Retd. Professor, Department Of Mathematics,  
 Utkal University, Bhubaneswar  
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2. **Prof. Jin Yun Yuan**  
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 Federal University of Parana,  
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