

Deepjyoti Goswami
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Teaching is my passion and research is what excites me.

Research Interests:	Elliptic, parabolic PDEs and integro-differential equations; incompressible visco-elastic fluids, Navier-Stokes equations, Oldroyd model of order one; finite element methods, discontinuous Galerkin methods, adaptive techniques.	
Current Research:	Two-level methods, various stabilizing finite element methods, penalty methods; first and second order time discretization schemes with non-smooth initial data. Navier-Stokes equations and Oldroyd Model of order one. DG methods.	
Future Plan:	Local and Hybrid Discontinuous Galerkin(DG) methods, optimal control theory.	
Academic Positions:	Assistant Professor	Tezpur University, Assam, India Since 31 st December, 2012
	Post Doctoral Fellow	UFPR, Curitiba, Brazil (Grant:INCTMat/CAPES) Duration: 01.02.2012 - 30.12.2012 Project: Linear Viscoelastic Fluids: Oldroyd Model
	Research Associate	IIT Bombay, India (12.08.2011 - 10.01.2012)
Education:	Ph.D. in Mathematics (2011) , Indian Institute of Technology (IIT) Bombay, India Thesis: Finite Element Methods for the Equations of Motion Arising in Oldroyd Model Supervisor: Professor Amiya Kumar Pani.	
	M.Sc. in Mathematics (2003) , University of Delhi, India. [79%]	
	B.Sc. in Mathematics (2000) , St. Stephens' College, India. [80%]	
	Higher Secondary, Science (1997) , Cotton College, Assam. [83.4%, 9 th position]	
	Matriculation (1995) , Senairam H.S. School, Assam. [82.9%]	
Publications:	1. Goswami, D. , Damázio, P.D. , Yuan, J.-Y. , Bir, B. (2023), Two-Grid Finite Element Galerkin Approximation of equations of motion arising in Oldroyd fluids of order one with non-smooth initial data, Comput. Math. Math. Phys. (Accepted) 2. Bir, B. , Goswami, D. , Pani, A. K. (2022), Finite element penalty method for the Oldroyd model of order one with non-smooth initial data, Comput. Methods Appl. Math. 22 (2), 297-325. 3. Bir, B. , Goswami, D. , Pani, A. K. (2021), Backward Euler method for the equations of motion arising in Oldroyd model of order one with nonsmooth initial data, IMA J. Numer. Anal., https://doi.org/10.1093/imanum/drab072	

- Publications:**
4. Bir, B. , Goswami, D. (2021), On a three step two-grid finite element method for the Oldroyd model of order one, J. Appl. Math. Mech. (ZAMM) 101 (11), <https://doi.org/10.1002/zamm.202000373>
 5. Goswami, D. , Damázio, P.D. (2015), A two-grid finite element method for time-dependent incompressible Navier-Stokes equations with non-smooth initial data, Numer. Math. Theory Methods Appl. 8 (4), 549-581.
 6. Goswami, D. , Pani, A. K. , Yadav, S. (2014), Optimal L^2 estimates for the semidiscrete Galerkin method applied to parabolic integro-differential equations with nonsmooth data, ANZIAM J. 55 (3), 245-266.
 7. Goswami, D. , Pani, A. K. , Yadav, S. (2013), Optimal Error Estimates of Two Mixed Finite Element Methods for Parabolic Integro-Differential Equations with Nonsmooth Initial Data, J. Sci. Comput. 56 (1), 131-164.
 8. Goswami, D. , Pani, A. K. (2011), An alternate approach to optimal L^2 -error analysis of semidiscrete Galerkin methods for linear parabolic problems with nonsmooth initial data, Numer. Funct. Anal. Optimiz. 32 (9), 946-982.
 9. Goswami, D. , Pani, A. K. (2011), A priori error estimates for semidiscrete finite element approximations to equations of motion arising in Oldroyd fluids of order one, Int. J. Numer. Anal. Model. 8 (2), 324-352.

- Submitted**
1. Bir, B. , Goswami, D. , A finite element method for the Equations of motion arising in Oldroyd model of order one with grad-div stabilization.
 2. Bir, B. , Goswami, D. , Pani, A. K. , Optimal L^2 error estimates of the penalty finite element method for the unsteady Navier-Stokes equations with nonsmooth initial data.
 3. Bajpai, S , Goswami, D. , Ray, K. , Optimal Error Estimates of a Discontinuous Galerkin Method for the Navier-Stokes Equations
 4. Bajpai, S , Goswami, D. , Ray, K. , A priori error estimates of a discontinuous Galerkin finite method for the Kelvin-Voight viscoelastic fluid motion equations
 5. Goswami, D. , Ray, K. , A discontinuous Galerkin method for the equations of motion arising in the Oldroyd model of order one
 6. Bajpai, S , Goswami, D. , Ray, K. , Optimal L^2 error estimate of a discontinuous Galerkin finite element method for the viscoelastic Oldroyd fluid of order one

- ArXiv:** (arxiv.org)
- 1209.0248 (math.NA) *Nonlinear Galerkin Finite Element for Viscoelastic Fluid Flow: Optimal Error Estimate.*
- 1306.3034 (math.NA) *A study of Nonlinear Galerkin Finite Element for time- dependent incompressible Navier-Stokes equation.*

- Invited Talks, Conference Presentations**
1. Mini-Symposium titled *Numerical Methods for Viscoelastic Problems, MAFELAP 2019, Brunel University London, UK, June 18-21, 2019.*
Talk titled *Two-grid finite element Galerkin approximation of the equations of motion arising in Oldroyd Fluids of order one with non-smooth initial data.*
 2. International Conference on Current Trends in PDEs: Theory & Computations, South Asian University, New Delhi, December 28-30, 2015.
Talk titled *A 2-grid FEM for the time-dependent incompressible NSEs with non-smooth data.*

3. II Brazil-China Symposium on Applied and Computational Mathematics, Foz do Iguaçu, Brazil, August 05-09, 2012
Presentation titled *Crank-Nicolson Scheme for the Oldroyd Model of Order One*
4. CWB 2010 - II Congress on Mathematics and Its Applications, FIEP, Curitiba, Brazil, December 06-10, 2010.
Presentation titled *Fully Discrete Approximation to the Equation of Motions arising in Oldroyd Fluid of order one.*
5. International Conference on Recent Trends in Computational PDEs, IIT Bombay, India, December 07-09, 2008
Presentation titled *Semidiscrete FEMs for the equations of motion arising in the Oldroyd model of viscoelastic fluids.*

Workshops/ Schools

1. Compact Course on Navier-Stokes equations for incompressible fluids, TIFR-CAM, Bangalore, June 03-13, 2014.
2. Workshop on Optimization with PDE Constraints, TIFR-CAM, Bangalore, November 25-December 6, 2013.
3. International Workshop on Advances in Computational Partial Differential Equations, BITS Pilani, Goa Campus, Goa, India, February 7-26, 2011.
4. International Congress of Mathematics, Hyderabad, India, August 19-27, 2010.
5. CIM/UC Summer School: Topics in Nonlinear PDEs, University of Coimbra, Portugal, July 22-27, 2007.
6. Lecture series by Prof.G.P.Galdi on Motion of a Rigid Body on Navier-Stokes Liquid, TIFR center, IISc, Bangalore, India, July 3-19, 2007.
7. Instructional School on Modern Theory of PDEs, IIT Bombay, India, May 27-July 23, 2007.
8. Indo-German Workshop on Automatic Differentiation, Optimal Control and Adaptivity with Applications, IIT Bombay, India, November 11-17, 2006.
9. The Annual Foundation School(AFS)-I, Bhaskaracharya Pratishthana, Pune, India, December 05-31, 2005. (Attended till December 18.)
10. Winter School 2005 by Nonlinear Study Group (NSG), IISc, Bangalore, India, December 19-23, 2005.

Programmes, Courses & FDPs

1. A seven days Professional Development Program for Mathematics College/University teachers conducted in June 2022, on June 09,14,16,21,23,28,30, College of Education, University of Illinois Urbana-Champaign.
2. Pedagogical Training for Mathematics Teachers, organized under the aegis of MTTS Trust (Funded by NBHM), Tezpur University, December 25-30, 2019.
3. Refresher Programme in Mathematical Sciences, Faculty Development Centre IIT(ISM) Dhanbad, May 16 - June 05, 2017.
4. Orientation Course, HRDC, University of Hyderabad, November 23 - December 20, 2016.
5. AICTE approved 4-week FDP on Use of ICT in Education for Online and Blended Learning, IIT Bombay, May 02 - July 10, 2016.

	6. A two-week ISTE STTP on Technical Communication, IIT Bombay, October 08 - December 05, 2015. 7. User Awareness Programme on Access to E-Resources, Central Library, TU, and INFLIBNET Centre, Gandhinagar, May 19-20, 2014.
Project:	UGC-BSR Start Up Grant. Grant: Rs. 6,00,000.00; Duration: 2014-16. Title: Fully discrete analysis of two-level/two-grid methods for Oldroyd model with non-smooth data.
Teaching Experience	<u>PG level courses:</u> Real Analysis, Numerical Analysis, Adv. Numerical Analysis, Partial Differential Equations, Mathematical Methods, Distribution Theory & Sobolev Spaces, Finite Element Methods. <u>UG level courses:</u> Mathematics I, Mathematics II, Real Analysis, Ordinary Differential Equations, Co-ordinate Geometry.
Review Experience:	Journal of Scientific Computing (Springer), Computational and Applied Mathematics (Springer), Computational Methods in Applied Mathematics (de Gruyter), American Mathematical Society (AMS) Mathematical Review, Mathematical Methods in the Applied Sciences (Wiley Online), Numerical Methods for Partial Differential Equations (Wiley Online), Applied Mathematical Modelling (Elsevier), Applied Numerical Mathematics (Elsevier), Applied Mathematics and Computations (Elsevier), International Journal of Numerical Analysis & Modeling (Univ. Alberta), Rocky Mountain Journal of Mathematics.
Awards & Fellowship:	Prabhulal Bhatnagar Memorial Prize for 2011-2012, being the most outstanding of all students who completed the requirements for the degree of Doctor of Philosophy in Mathematics, IIT Bombay Senior Research Fellowship, CSIR in December 2008 Junior Research Fellowship, CSIR in December 2005 Graduate Aptitude Test in Engineering (GATE), 2005. AIR: 11 (99.37) in Mathematics
Personal Details:	Date of Birth: 31-01-1980. Alt. e-mail: deepjyotig@gmail.com Mobile: 8812978002 Marital Status: Married. Nationality: Indian.