

CURRICULUM VITAE

Dr. Nagarani Ponakala
Senior Lecturer
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The University of the West Indies
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<https://scholar.google.com/citations?user=eC12394AAAAJ&hl=en>

RESEARCH INTERESTS

- Physiological fluid dynamics: Mathematical Modelling and simulation of complex physiological situations.
- Numerical Methods of partial differential equations.

EDUCATIONAL QUALIFICATIONS

- **Ph. D** in Applied Mathematics (**Fluid Dynamics**), 2003 from Sri Padmavati Women's University, Tirupati, A. P., INDIA.
Thesis Title: Studies on Casson Fluid Flows - Applications to Blood Flows
- **M. Phil** in Applied Mathematics (**Fluid Dynamics**), 2000 from Sri Padmavati Women's University, Tirupati, A. P., INDIA.
Thesis Title: Peristaltic transport of a particle-Power law fluid suspension in a Channel.
- **M. Sc** in Applied Mathematics 1998 with 1st rank from Sri Padmavati Women's University, Tirupati, A. P., INDIA
- Diploma in Personal Computer Applications

TRAINING

- Trained in computer software **FORTRAN**, **C language** and various professional software like **GRAPHER**, **SURFER**, **MATLAB**, **MATHEMATICA** etc.

GRADUATE RESEARCH AND SUPERVISION

Past Students

- i. Mrs. Binil Thomas Sebastian (Ph.D): 2009-15 (Awarded)
Title of the Thesis: Theoretical study of dispersion in unsteady Casson fluid flow
- ii. Mr. Andre Small (MPhil): 2012-15 (Thesis submitted)
Title of the thesis: Peristaltic Transport of a Newtonian Fluid in Finite Length Tubes

Present Students

- i. Ajani Ausaru (M.Phil): Since 2015-16
- ii. Omar Golaub(M.Phil) : Since 2015-16

Graduate Projects

- 2015-16: Michael Bennett: MSc project :Active

Undergraduate projects

- 2013-14: Tamara Liard, Kevin Roye, Sabrina Waugh: The one dimensional diffusion equation.
- 2012-13: Kibwe Wallace, Clive Dunkley: Bessel Functions and Applications
- 2011-12: Dorraine Leslie, Renae Grant, Vaun-Pierre Wynter: One dimensional heat equation.

FELLOWSHIPS/AWARDS

- **Faculty of Science and Technology award** for outstanding achievement in teaching assessment for 2012-13.

- **The Principal's research award for the best publication** of the article entitled "Effect of boundary absorption on dispersion in Casson fluid flow in an annulus - Application to catheterized artery" from The University of the West Indies, Mona, Kingston, Jamaica for the year 2009-10.
- **Junior Research Fellowship** in Engineering and Technology from University Grants Commission, India
- **Gold medal** for the first rank in M.Sc.
- **Silver and Gold Medals** for proficiency in Chemistry and Physics in UG
- **Rolling Trophy** for outstanding academic performance in UG
- Publishing the biography in the book **Who is Who in the World since the year 2009**, published by Marquis Who is Who, NJ, U.S.A.

TEACHING EXPERIENCE

17 years

Year	Position	Institution
Aug.2012- Till date	Sr. Lecturer (equiv. to Associate Professor)	Department of Mathematics, The University of the West Indies, Mona Campus, Kingston, Jamaica
Mar 2007 - July 2012	Lecturer (equiv. to Assist Professor)	Department of Mathematics, The University of the West Indies, Mona Campus, Kingston, Jamaica
Dec 2003 - Feb 2007	Assistant Professor	Vignan Institute of Technology and Science, (Affiliated to J. N. Tech. University), Deshmukhi, Nalgonda, A.P., India
Jun 2003 - Nov 2003	Assistant Professor	Vignan Engineering College,

		(Affiliated to J. N. Tech. University) Vadlamudi, Guntur A.P., India
1999 - 2003	Teaching Assistant	Sri Padamavati Women's University, Tirupati, India
1998-99	Lecturer	Vignan Co-operative Junior College, Guntur, A.P., India

ADMINISTRATIVE EXPERIENCE

- Worked as Head, Centre for Mathematical Sciences, Vignan Institute of Technology & Science, Deshmukhi from Dec 2003 to Feb 2007.

PROFESSIONAL ACTIVITIES

- Member Scientific Research Committee, OFFICE OF SPONSORED RESEARCH, UWI, Mona.
- Member of Board of external examiners, The University of the West Indies, St. Augustine Campus, Trinidad and Tobago.
- Member of Board of external examiners, University of Technology, Jamaica.
- Member of manuscript review board of 8 Journals :
 - Ain Shams Engineering Journal, Elsevier Publ.
 - Applied Bionics and Biomechanics, IOS Press
 - Communications in Nonlinear Science and Numerical Simulations, Elsevier Publ.
 - Chemical Engineering Communications, Taylor & Francis group
 - Sadhana -Academy Proceedings in Engineering Science, Indian Academy of Sciences Publ.

- Applied Mathematics and Computation, Elsevier Publ.
- Mathematical Biosciences, Elsevier Publ.
- Applications and Applied Mathematics, Prairie View A&M University, USA, Publ.
- **Examiner for Ph.D/M.Phil Thesis**
 - Independent external examiner for Ph. D thesis of Curtis Boodoo, UWI, St. Augustine Campus.
 - Independent external examiner for Ph. D thesis of Festus Irimisose Arunaye.

Research Projects

- Modelling the dispersion process in oscillatory flows with emphasis to cardiovascular system, sponsored by The University of the West Indies , Mona, Kingston, Jamaica under **New Initiative Grant** for 2008-09.
- **Dispersion in Casson fluid flows**, sponsored by University Grants Commission, India under Junior Research Fellowship in **Engineering and Technology** for 2001-03.

Organization: Conferences/Symposiums

- Member of the organizing committee of the 9th Faculty Conference of the Faculty of the Pure and Applied Sciences, "Science: A Bridge to the Future." April 2012.
- Chair of the Organizing Committee of the National Conference on Applications of Mathematical Sciences in Engineering (**NCAMSE-2005**), 19-20th March 2005, at Vignan Institute of Tech. & Science, Deshmukhi, Nalgonda, India

Membership in Scientific Organizations

- Society for Industrial and Applied Mathematics, USA
- Life member, The Indian Society of Theoretical And Applied Mechanics (ISTAM), India

- Life member, Andhra Pradesh Society for Mathematical Sciences (APSMS), India

Lectures/Invited Talks

- Mathematical Modelling, 9th Jan, 2009, Department of Mathematics and Computer Science, University of the West Indies, Cave Hill Campus, Barbados.
- Modelling Physiological Fluid Flows, 14th Nov, 2008, Department of Mathematics and Computer Science, University of the West Indies, Mona, Kingston, Jamaica.
- Dispersion of a solute in Casson fluid flow in a tube - Application to blood flow, 26th October 07, Department of Mathematics and Computer Science, University of the West Indies, Mona, Kingston, Jamaica.
- Mathematical Modelling in Real Life Problems, 6th March 2004, Andhra Loyola College, Vijayawada, A.P., India

Publications

Refereed Journal publications

1. P. Nagarani and B.T. Sebastian: Dispersion of a solute in pulsatile non-Newtonian fluid through a tube, *Acta Mech* 2013, 224: 571-585.
2. B. Ramana, G. Sarojamma, B.Vishali, P. Nagarani: Dispersion of a Solute in a Herschel-Bulkley Fluid Flowing in a Conduit, Journal of experimental Sciences, *Journal of Experimental Sciences* 2012, 3(2): 14-23.
3. P. Nagarani and A. Lewis: Peristaltic flow of a Casson fluid in an annulus. *Korea - Australia Rheology Journal* 24(1), 2012, 1-9.
4. F.I. Arunaye. F. I, B.S. Bhatt and P. Nagarani : On the solution of the convective-diffusion equation, *Int. Jour. of Pure and Applied Mathematics*, 68(1), 2011, 37-53.

5. P. Nagarani: Peristaltic transport of a Casson fluid in an inclined channel, *Korea - Australia Rheology Journal*, 22(2), 2010, 105-111.
6. P. Nagarani, G. Sarojamma and G. Jayaraman.: Effect of boundary absorption on dispersion in Casson fluid flow in an annulus - application to catheterized artery. *Acta Mechanica*, 202, 2009, 47-63.
7. P. Nagarani, G. Sarojamma: Effect of body acceleration on pulsatile flow of Casson fluid through a mild stenosed artery. *Korea - Australia Rheology Journal* , 20(4), 2008, 189-196.
8. P. Nagarani, and G. Sarojamma: Peristaltic transport of small particles - power law fluid suspension in a channel, *Australasian Physical & Engineering Sciences in Medicine*, 30 (3), 2007, 185-193.**
9. P. Nagarani, G. Sarojamma and G. Jayaraman.: Exact analysis of unsteady convective diffusion in Casson fluid flow in an annulus - Application to catheterized artery, *Acta Mechanica*, Vol 187, 2006, 189-202.
10. P. Nagarani, G. Sarojamma and G. Jayaraman: Effect of boundary absorption in dispersion in Casson fluid flow in a tube, *Annals of Biomedical Engineering*, Vol. 32, No. 5, 2004, 706-719.
11. P. Naga Rani, G. Sarojamma: Peristaltic transport of a Casson fluid in an asymmetric channel, *Australasian Physical & Engineering Sciences in Medicine*, Vol. 27, No.2, 2004, 49-59.
12. G. Sarojamma, G., P. Naga Rani and M.Jan.: Channel flow of a viscous fluid induced by a traveling thermal wave, *Acta Ciencia Indica*, Vol. XXIX M, No. 4, 2003,771-782.
13. G. Sarojamma, P. Haritha and P. Nagarani: Peristaltic Transport of a Viscous Fluid in a Channel under the Influence of a Transverse Magnetic Field, *Proc. of AP Akademi of Sciences*, Vol. 7, No. 1, 2003, 25-32.

14. G. Sarojamma and P. Naga Rani: Pulsatile flow of a Casson fluid through homogeneous porous medium subject to external acceleration, *International Journal of Non-Linear Differential Equations Theory-Methods and Applications*, Vol. 7, Nos. 1 and 2, Jan-Dec.2002, 50-64.

Books & Monographs

15. B.T. Sebastian and **P. Nagarani**: Effect of Boundary Absorption on Dispersion of a Solute in Pulsatile Casson Fluid Flow. *Interdisciplinary Topics in Applied Mathematics, Modeling and Computational Science*, Ed By Cojocar, M., Kotsireas, I.S., Makarov, R., Melnik, R.V.N., Shodiev, H.: Springer, 2015, 117 , 389-395

Refereed Conference Proceedings

16. P. Nagarani and B. Sebastian: Effect of Flow Oscillation on Dispersion of a Solute in a Tube, AIP Conf. Proc. 1368, 2011, pp. 29-32; doi:10.1063/1.3663452.
17. P. Nagarani, G. Sarojamma and G. Jayaraman: On the dispersion of a solute in a Casson fluid flow in an annulus with boundary absorption, Proc. of the American Conference on Applied Mathematics, 2008, 265-273. ISBN: 978-960-6766-47-3
18. P. Nagarani and G. Sarojamma: Flow of a Casson fluid through a stenosed artery subject to periodic body acceleration, Proc. of the 9th WSEAS Int. Conf. on Mathematical and Computational methods in Science and Engineering, 2007, 237-244.

Conference Abstracts

1. Binil Sebastian and Nagarani. P.: Dispersion in Unsteady Casson Fluid in an Annulus with Wall Absorption, 10th Faculty of Science and Technology Conference , UWI, Mona, June 9-11 ,2015

2. Andre Alexander Small, Nagarani Ponakala, Girija Jayaraman, Peristaltic Transport of a Newtonian Fluid in a finite length tube, The 10th Faculty of Science and Technology Conference, UWI, Mona, June 9-11, 2015
3. Binil Sebastian and Nagarani. P.: Effect of boundary absorption of a solute in a pulsatile Casson fluid flow, International Conference on Applied Mathematics, Modeling and Computational Sciences Waterloo, Ontario, Canada August 26-30,2013.
4. B.T. Sebastian and P. Nagarani: Dispersion of a Solute in a Catheterized Artery-A Mathematical Model , 9th Faculty Conference of the Faculty of the Pure and Applied Sciences, "Science: A Bridge to the Future." April 2012.
5. P. Nagarani and B.T. Sebastian: Mathematical Model of dispersion of a solute in oscillatory flow in an annulus, TWAS-ROLAC, 10th Young Scientist Conference, Trinidad & Tobago, W.I., Dec 7-9, 2011.
6. B.T. Sebastian and P. Nagarani: Effect of Non-Newtonian Pulsatile Flow on Convective Diffusion in Annulus, SIAM Conference on Analysis of Partial Differential Equations, San Diego, California, USA, November 14-15, 2011.
7. B.T. Sebastian and P. Nagarani : A Study on Longitudinal Dispersion of a Solute, FOSS conference, Jamaica, W.I, June 2011.
8. P. Nagarani and B.T. Sebastian: Effect of Flow oscillation on dispersion of solute in a tube, The international conference on Applied mathematics, Modelling and Computational Science, July 25-29, 2011, Waterloo, Canada.
9. P. Nagarani: Peristaltic transport of a Casson fluid in an inclined channel, TWAS-ROLAC Caribbean Young scientist and technologist Conference, Ocho Rios, Jamaica, W.I, January 20-22, 2010.
10. P. Nagarani, G. Sarojamma and G. Jayaraman: On the dispersion of a solute in a Casson fluid flow in an annulus with boundary absorption, pp. 265-273, WSEAS conference on Recent Advances on

Applied Mathematics, Harvard University, Massachusetts, USA, March 24-26, 2008.

11. P. Nagarani and G. Sarojamma: Flow of a Casson fluid through a stenosed artery subject to periodic body acceleration pp. 236-243, 9th WSEAS international conference on Mathematical and Computational methods in Science and Engineering, University of West Indies, Trinidad and Tobago Island, Nov 5-7, 2007.
12. P. Nagarani, G. Sarojamma and G. Jayaraman: Effect of boundary absorption in dispersion in non-Newtonian flow - Application to arterial blood flow, National Conference on Applications of Mathematical Sciences in Engineering, 19-20 March 2005, Vignan Institute of Technology and Science, Deshmukhi, Nalgonda, A.P., India.
13. P. Nagarani and G. Sarojamma: Peristaltic Transport of a Casson Fluid in an asymmetric channel, XI congress of Andhra Pradesh Society for Mathematical Sciences (APSMS) held at Sri Padmavati Mahila Visvavidyalayam, Tirupati, India from 31-01-2003 to 2-02-2003.
14. P. Nagarani and G. Sarojamma: Peristaltic Transport of a Viscous Fluid in a Channel under the influence of a Transverse Magnetic field, X congress of APSMS held at Sri Rama Krishna College, Nandyala, A.P. India from 17-01-2002 to 19-01-2002.
15. P. Nagarani and G. Sarojamma: Peristaltic Transport of a Particle Power law fluid suspension in a Channel, UGC National Seminar on Finite Element Methods in Computational Fluid Dynamics conducted by Department of Mathematics, Sri Krishnadevaraya University, Anantapur, India, 2002.
16. P. Nagarani and G. Sarojamma: Pulsatile flow of a Casson fluid through homogeneous porous medium subject to periodic body acceleration, National Seminar on Mathematical Modelling in Science

and Technology conducted by Department of Applied Mathematics, SPMVV, Tirupati, India, 2001.

Conferences Presentations/Attended

1. Mathematical Model of dispersion of a solute in oscillatory flow in an annulus, TWAS-ROLAC, 10th Young Scientist Conference, Trinidad & Tobago, W.I., Dec 7-9, 2011.
2. Effect of Flow oscillation on dispersion of solute in a tube, The international conference on Applied mathematics, Modelling and Computational Science, July 25-29, 2011, Waterloo, Canada.
3. Attended the conference FAN2010, Fluid Dynamics, Analysis, and Numerics, June 28-30, 2010, Duke University, Durham, NC, USA.
4. Peristaltic transport of a Casson fluid in an inclined channel, TWAS-ROLAC Caribbean Young scientist and technologist Conference, Ocho Rios, Jamaica, W.I, January 20-22, 2010.
5. On the dispersion of a solute in a Casson fluid flow in an annulus with boundary absorption, pp. 265-273, WSEAS conference on Recent Advances on Applied Mathematics, Harvard University, Massachusetts, USA, March 24-26, 2008.
6. Flow of a Casson fluid through a stenosed artery subject to periodic body acceleration pp. 236-243, 9th WSEAS international conference on Mathematical and Computational methods in Science and Engineering, University of West Indies, Trinidad and Tobago Island, Nov 5-7, 2007.
7. Effect of boundary absorption in dispersion in non-Newtonian flow - Application to arterial blood flow, National Conference on Applications of Mathematical Sciences in Engineering, 19-20 March 2005, Vignan Institute of Technology and Science, Deshmukhi, Nalgonda, A.P., India.
8. Peristaltic Transport of a Casson Fluid in an asymmetric channel, XI congress of Andhra Pradesh Society for Mathematical Sciences

(APSMS) held at Sri Padmavati Mahila Visvavidyalayam, Tirupati, India from 31-01-2003 to 2-02-2003.

9. Peristaltic Transport of a Viscous Fluid in a Channel under the influence of a Transverse Magnetic field, X congress of APSMS held at Sri Rama Krishna College, Nandyala, A.P. India from 17-01-2002 to 19-01-2002.
10. Peristaltic Transport of a Particle Power law fluid suspension in a Channel, UGC National Seminar on Finite Element Methods in Computational Fluid Dynamics conducted by Department of Mathematics, Sri Krishnadevaraya University, Annapur, India, 2002.
11. Pulsatile flow of a Casson fluid through homogeneous porous medium subject to periodic body acceleration, National Seminar on Mathematical Modelling in Science and Technology conducted by Department of Applied Mathematics, SPMVV, Tirupati, India, 2001.

SUBJECTS TAUGHT

At UWI, Mona

Graduate: Differential Equations MATH6622

Undergraduate: Mathematical Modelling (MATH3422), Numerical Methods (M32A), Introduction to Partial Differential Equations (MATH3700), Mathematical Methods (MATH2301), Optimization theory (M32B), Topics in operations Research (M32C), Analysis and Mathematical Methods II (M21B), Linear Algebra (M20B), Differential Equations (M32Q), Functions of Real Variables (M10B).

At Vignan Institute of Technology and Science, India

Numerical Methods, Special Functions, Engineering Mathematics I, II & III

At Sri Padmavati Women's University, India

Operations Research, Mathematical Methods, Differential Equations.

DEPARTMENTAL ACTIVITIES AT UWI

Coordinator

- Examination Coordinator since 2014
- Programme coordinator for BSc double major in Mathematics and Modelling Processes since 2011
- Undergraduate project coordinator since 2011
- Technical coordinator since 2009
- Coordinator for Curriculum revision 2008-2011.
- Coordinator for books and department library 2008-2011
- Committee member of FPAS AquAC for the year 2011-12
- Member of the committee for Research day Activities for the year 2008-09.

New Programmes developed

- Double Major in Mathematics and Modeling Processes

New Courses designed

Graduate:

- i) Numerical Methods for Partial Differential Equations:
MATH6623
- ii) Differential Equations: Theory and Applications
MATH6622

Undergraduate:

- i) Introduction to Ordinary Differential equations MATH 2300
- ii) Mathematical methods (MATH 2301)
- iii) Introduction to Partial Differential Equations (MATH3700) (in collaboration with Dr. Davide Batic)
- iv) Research Project in Mathematics (MATH3702) (in collaboration with Dr. Conall Kelly)

❖ Revised the above courses under 3 credit system.

Curriculum Revision (Mona Campus)

- Coordinated the curriculum revision of the programme structure under 3 credit system.
- Coordinated the curriculum revision of all I, II & III levels of undergraduate courses.
- Working for the revision of syllabus and programme of M.Sc programme.
- Worked for developing lab for mathematics students with mathematical software.

Collaboration with Other UWI Campuses

- Working as a coordinator for the harmonization of the syllabus in UWI
- Started a Math forum for discussion of any event jointly organized by the three campuses.
- Participated in Cross campus meeting in curriculum revision

Departmental Projects

- Worked as a team member with departmental colleagues to write the project proposal for UNESCO and got a grant of US\$12000 for development of Mathematics in general and Mathematical Modelling in particular.
- Worked for a project for Computers lab for Mathematics Department.

Awards and Grants Received

- Research article **“Effect of boundary absorption in dispersion in Casson fluid flow in an annulus: Application to catheterized artery”** in collaboration with G. Sarojamma and G. Jayaraman was awarded the **Best Research Publication** for the year 2009-10 in the Faculty of Pure and Applied sciences.
- **Modelling the dispersion process in oscillatory flows with emphasis to cardiovascular system**, sponsored by The University of the West Indies , Mona, Kingston, Jamaica under **New Initiative Grant** for 2008-09.

Student Counseling

- Counseling and guiding the students in their academic and personal matters.

PERSONAL DETAILS

Date of Birth	: 24 th May 1976
Gender	: Female
Marital Status	: MARRIED
Nationality	: Indian
Citizenship	: Indian