



SYMPHONY CHAKRABORTY

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WORK EXPERIENCE

- Currently working as a Post Doctoral Fellow in the Center for Advanced Study in Theoretical Sciences (CASTS), National Taiwan University (NTU), Taipei, Taiwan from *August 2017 to till date*.
- Worked as a Post Doctoral Fellow in the dept. of Mechanical Engineering, National Taiwan University of Science and Technology (NTUST), Taipei, Taiwan from *December 2014 to July 2017*.
- Teach Software Lab. course MA5740 to M.Tech first year students from *July to November 2014* in Indian Institute of Technology Madras (IITM), Chennai, India.
- Worked as a Post Doctorate Fellow in the dept. of Mathematics, Indian Institute of Technology Madras (IITM), Chennai, India from *April 2013 to November 2014*.

ACADEMIC DETAILS

- University of Pierre and Marie Curie Paris 6, Paris, FRANCE.
PhD in Mechanical Engineering *September 2009 – July 2012*
Thesis topic : “Dynamics and stability of a non-Newtonian falling film”
Supervisor : Dr. Christian Ruyer-Quil, Neil Ribe
PhD degree awarded on 2nd July 2012.
Area of Study : Fluid Mechanics.
- University of Health medical and Technological Science (SMIT), Rangpo, Sikkim, INDIA.
Master of Science in Mathematics *August 2007 – May 2009*
Specialization : Numerical Analysis
C.G.P.A. : 7.5/10, Rank : 1st.

LIST OF PUBLICATIONS

Journal Papers:

- M. -J. Chern, G. -T. Lu, Y. -H. Kuan, **S. Chakraborty**, G. Nugroho, C. -B. Liao & T. -L. Horng 2017. “Numerical study of vortex-induced vibration of circular cylinder adjacent to plane boundary using direct-forcing immersed boundary method” *Journal of Mechanics* , 1-15, Impact factor : 0.738, **Q4** 16.165, Rank : 112/133 (MECHANICS - SCIE).
- C. -H. Ko, Y. -H. Wu, J. -R. Tsai, B. -J. Wang & **S. Chakraborty** 2016. “Two dimensional analytical modeling of a linear variable filter for spectral order sorting” *Applied Optics* **55**(17), 4531-4537, Impact factor : 1.645, **Q3** 46.196, Rank : 50/92 (OPTICS - SCIE).
- Anjalaiah, **S. Chakraborty** & R. Usha 2015. “Steady solution of an inverse problem in gravity-driven shear-thinning flow: Reconstruction of an uneven bottom substrate” *Journal of Non-Newtonian Fluid Mechanics* **219**, 65-77, citation 4, Impact factor : 2.631, **Q1** 81.579, Rank : 25/133 (MECHANICS - SCIE).
- **S. Chakraborty**, C. Ruyer-quil, P. -K. Nguyen & V. Bontozoglou 2014. “Extreme solitary waves on falling liquid films” *Journal of Fluid Mechanics* **745**, 564-591, citation 19, Impact factor : 2.987, **Q1** 86.842, Rank : 18/133 (MECHANICS - SCIE).
- C. Ruyer- quil, **S. Chakraborty** & B. S. Dandapat 2012. “Wavy regime of a power-law film flow” *Journal of Fluid Mechanics* **693**, 220-256, citation 21, Impact factor : 2.987, **Q1** 86.842, Rank : 18/133 (MECHANICS - SCIE).

- **S. Chakraborty** & B. S. Dandapat 2010. "Effects of variable fluid properties on unsteady thin-film flow over a non-linear stretching sheet" *International Journal of Heat and Mass Transfer* **53**, 5757-5763, citation 12, Impact factor : 3.552, Q1 88.793, Rank : 9/133 (MECHANICS - SCIE).
- **S. Chakraborty**, T. -W. Lin & M. -J. Chern 2017. "Vortex motion around vertically vibrating cylinder in oscillatory flow" (submitted to *Journal of Marine Science and Technology*; Impact factor : 1.281, Q2 53.571, Rank : 7/14 (ENGINEERING, MARINE - SCIE)).
- M. -J. Chern, K. King'Ora, **S. Chakraborty** & T. -L. Horng "Direct forcing immersed boundary modelling for vortex induced vibration in turbulent flow" (submitted in *Applied Mathematical Modelling*; Impact factor : 2.768, Q1 77.820, Rank : 30/133 (MECHANICS - SCIE)).
- C. -H. Ko, Y. -H. Wu, J. -R. Tsai, B. -J. Wang, **S. Chakraborty**, K. J. Shah, S. -F. Lin & C. -D. Der "Two-dimensional modeling with experimental verification of a linear variable filter for spectral order sorting of 400 – 1000nm" (submitted in *Applied Optics*; Impact factor : 1.645, Q3 46.196, Rank : 50/92 (OPTICS - SCIE)).
- **S. Chakraborty** & T. W. -H. Sheu "Stability and dynamics of a chemotaxis-diffusion-convection system in a shallow fluid layer" (under preparation)
- **S. Chakraborty** "A power-law film falling down a slippery inclined plane" (under preparation)
- **S. Chakraborty** & C. Ruyer-quil "Dynamics of a visco-plastic falling film" (under preparation).

Conference Papers:

- C. -H. Ko, Y. -H. Wu, **S. Chakraborty**, S. -Y. Tsai, C. -T. Hong, B. -J. Wang, J. -R. Tsai, & C. -D. Der 2016. "Two dimensional analytical modeling of a linear variable filter for spectral order sorting" *Proc. of SPIE* **10021** 100210I-1.
- C. -H. Ko, Y. -H. Wu, **S. Chakraborty**, K. J. Shah, J. -R. Tsai, B. -J. Wang, S. -F. Lin & C. -D. Hsiao 2017. "Two-dimensional modeling with experimental verification of a linear variable filter for spectral order sorting of 400 – 1000nm" *IEEE Conference on Lasers and Electro-Optics Pacific Rim (CLEO-PR)* 1-5.

FIELDS OF INTEREST

- CFD, FSI, Numerical Analysis, Fluid dynamics, Applied Optics, Computational Biology, Mechanics, Astronomy.

TECHNICAL SKILLS

- **Languages** (FORTRAN, C)
- **Software Packages/Tools** (L^AT_EX, OpenMP, Gnuplot, Tecplot, Xfig, MATHEMATICA, MATLAB, AUTO-07p, Gerris, Microsoft Office (Word, Excel, PowerPoint).)
- **Operating System** (Linux, Windows).

MASTERS PROJECT WORK (RESEARCH EXPERIENCE)

Effects of thermo-physical properties variation on unsteady thin-film flow over a non-linear stretching sheet. *Guide: Prof. B. S. Dandapat, January to May 2009*, Dept. of Mathematics, SMIT, Rangpo, Sikkim, India.

OTHER COURSES

Diploma Course in Desktop Publishing, *July 2004 - June 2005*. Grade: A+.
Siliguri Youth Computer Training Center Under West Bengal Government, Excel Infocom Pvt.

SHORT-TERM COURSE ATTENDED

- **French Language Learning Course** *October 2009 - June 2010* Level A1; and *March - June 2011* Level A2, organized at Université Paris Sud 11, Orsay, France.
- **Course on Nonlinear Waves** 4th – 6th *May 2010*, organized at Technion city Haifa, Israel.
- **Course on Liquid Complex Film with Complex Fluid** 17th – 18th *May 2010*, organized at Lab. FAST, Orsay Cedex, France.

- **Experimental Techniques for Interfacial Flow Measurements** 6th – 7th September 2010, organized at University of Thessaly, Volos, Greece.
- **Introduction to Hydrodynamic Instabilities** September - December 2010, organized at Graduate school in Polytechnique, Paris, France.
- **An Introduction to Turbulent Flow Simulations** 2nd – 9th March 2017, organized at National Taiwan University of Science and Technology, Taipei, Taiwan.

CONFERENCE/WORKSHOP ATTENDED & PAPER PRESENTED

- **National Conference on Recent Advances in Mathematics and Its Applications** held in Sikkim Government College, Gangtok on 9th April 2008, organized by Department of Mathematics, Sikkim University, Sikkim, India.
- **Introduction into the Experimental and Theoretical Study of Interfacial Fluid Flows** (CNRS), Summer School, 7th – 11th September 2009, organized at Université Paris Sud 11, Orsay, France.
- **Bifurcations and Instabilities in Interfacial Complex Fluid Flows**, Summer School, 21st June - 2nd July 2010, organized at El Escorial, Madrid, Spain (Oral & poster presentation on “Wavy regime of a shear-thinning film flow”).
- **TransAT, a Computational Multi-Fluid Dynamics Software**, Winter Training Session on TransAT, 4th – 5th October 2010, Zürich, Switzerland.
- **Multi-scale Fluid Flows and Interfacial Phenomena** 8th – 11th November 2010, Université Libre de Bruxelles (ULB), Brussels, Belgium (Oral & poster presentation on “Wavy regime of a viscoplastic film flow”).
- **The 63rd Annual Meeting of the American Physical Society’s (APS) Division of Fluid Dynamics (DFD)** from 21st – 23rd November 2010, California (CA), USA (Oral presentation on “Wavy regime of a viscoplastic film flow”).
- **Interfacial Complex Fluid Flows with Phase Changes**, Spring School, 3rd – 7th April 2011, Haifa, Israel.
- **Fourth International Symposium on Instabilities and Bifurcations in Fluid Dynamics (BIFD)** with a special session on Bifurcations and Instabilities of Thin Liquid Films and Drops, 18th – 21st July 2011, organized at Universitat Polytechnica de Catalunya, Barcelona, Spain (Oral presentation on “DNS of solitary waves running down a vertically falling film”).
- **Hybrid Modelling of Flows of Complex Liquids (UGOE)**, Summer School, 19th – 23rd September 2011, Goettingen, Germany (Oral presentation on “Numerical prediction of the properties of the solitary waves in the drag-intertia regime”).
- **The 64th Annual Meeting of the American Physical Society’s (APS) Division of Fluid Dynamics (DFD)** from 20th – 22nd November 2011, Baltimore (MD), USA (Oral presentation on “Solitary waves running down a vertically falling film: low-dimensional models”).
- **56th Congress of the Indian Society of Theoretical and Applied Mechanics** from 19th – 21st December 2011, Surat, Gujarat, India (Oral presentation on “Solitary waves running down a vertically falling film: low-dimensional models”).
- **Marie Curie Actions and Euro Science Open Forum 2012**, 10th – 15th July 2012, Dublin, Ireland.
- **Wave Patterns and Interactions in Advection-Dominated Flows**, Summer School, 16th – 20th July 2012, organized at University of Thessaly, Volos, Greece (Oral presentation on “Dynamics of a visco-plastic falling film”).
- **Application of Mathematics in Industries and Technology**, Workshop, 5th – 11th December 2012, organized at Sikkim Manipal University of Science and Technology, Sikkim, India (Oral presentation on “Nonlinear waves”).
- **Theories of Wave-body Interactions and Recent Research Topics**, Workshop, 2nd – 5th February 2015, organized at Ministry of Science and Technology (MOST), Taipei, Taiwan.

- **The 18th International Conference on Finite Elements in Flow Problems (FEF)**, from 16th – 18th March 2015, Taipei, Taiwan (Oral presentation on “Numerical study of vortex-induced vibration of circular cylinder adjacent to plane boundary using direct forcing immersed boundary method”).
- **The 22nd National CFD Conference 2015**, from 26th – 28th August 2015, New Taipei City, Taiwan (Posters presentation on “Dynamics of a visco-plastic falling film”).
- **Computational Mechanics Conference 2015**, from 22nd – 23rd October 2015, Taipei, Taiwan (Oral presentation on “The development of Smoothed Particle Hydrodynamics (SPH) modeling for solid-fluid interaction”).
- **1st International Engineering Forum - IEF 2016**, from 20th – 22nd February 2016, organized at National Taiwan University of Science and Technology (NTUST), Taipei, Taiwan (1. Oral presentation on “Two dimensional analytical modeling of a linear variable filter for spectral order sorting”; 2. Oral & poster presentation on “A power-law film falling down a slippery inclined plane”).
- **SPIE Photonics Asia 2016**, from 12th – 14th October 2016, organized at Beijing International Convention Center, Beijing, China. (1. Oral presentation on “Two dimensional analytical modeling of a linear variable filter for spectral order sorting” by Prof. Cheng-Hao Ko).
- **2nd Association of Computational Mechanics Taiwan (ACMT) Conference 2016**, from 20th – 21st October 2016, organized at Taipei innovation city Convention Center, New Taipei City, Taiwan (Oral presentation on “Numerical study of wave interaction with rigid body in two degrees of freedom (2DOF)”).

AWARDS & FELLOWSHIPS

- **European Marie Curie Fellowship** for Early Stage Research training (Initial Training Network of MULTIFLOW) awarded from *September 2009 -August 2012*.
- **Women Post Doctoral Fellowship** awarded by Indian Institute of Technology Madras (IITM), from *April 2013 - March 2015*.
- **Taiwan Research Fellowship** awarded by Ministry of Science and Technology MOST, Taiwan from *October 2014 - September 2017*.

MEMBERSHIP

- American Physical Society (APS).
- Indian Mathematical Society (IMS).
- International Association of Engineers (IAENG).

COMMUNICATION SKILLS

- English, Hindi : Fluent
- Bengali : Mother tongue
- French, Chinese, Gujarati : Basic Knowledge

EXTRA CURRICULAR ACTIVITIES

- Trained in Indian Classical Music under “*Prayag Sangeet Samiti, Allahabad Board*”, passed 5th year exam and Diploma.
- Passed Diploma in Indian Rabindra Sangeet under “*Bangiya Parisad*” from West Bengal Board of Music.

INTEREST & HOBBIES

- Music, Photography, Traveling, Reading.
- Badminton, Internet Surfing, Computer Games.

REFERENCES

Name	Designation	Address	Phone & Email-id
Christian Ruyer-Quil	Professor	Universite de Savoie, CNRS, Laboratoire LOCIE, Savoie Technolac, Le Bourget du Lac, 73376 Cedex, France.	+33 603230408 <i>Christian.Ruyer-Quil@univ-savoie.fr</i>
Vasilis Bontozoglou	Professor	Department of Mechanical Engineering, University of Thessaly, Argonafton and Filellinon, 38221 Volos, Greece.	+30 2421074069 <i>bont@mie.uth.gr</i>
Ming-Jyh Chern	Professor	Department of Mechanical Engineering, National Taiwan University of Science and Technology, No. 43, Sec. 4, Keelung Road, Dist. Da'an, Taipei 10607, Taiwan.	+886 (02)2737-6496 <i>mjchern@mail.ntust.edu.tw</i>
Tony Wen-Hann Sheu	Professor	Department of Engineering Science and Ocean Engineering, National Taiwan University, No. 1, Sec. 4, Roosevelt Road, Dist. Da'an, Taipei 10617, Taiwan.	+886 (02)3366-5746 <i>twshsheu@ntu.edu.tw</i>

PERSONAL DETAILS

Gender	: Female
Date of Birth	: 5 th April 1983
Place of Birth	: Agartala, Tripura, India.
Marital Status	: Single
Nationality	: Indian
Present Address	: Room no. 403, Mathematics Research Building, : Center of Advanced Study in Theoretical Sciences (CASTS), : National Taiwan University (NTU), No. 1, Sec. 4, : Roosevelt Road, Dist. Da'an, Taipei 10617, Taiwan (R.O.C).
Permanent Address	: C/O Sukla Chakraborty, Block-7, Flat 1F, : Shantiniketan Housing Complex, P.O. Sushruta Nagar, : Dist. Darjeeling, West Bengal 734012, India.