Curriculum Vitae

1. Name : KAJAL KUMAR MONDAL
2. (i) Address for Communication:

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DESHBANDHUPARA, SILIGURI, PIN 734004, WEST BENGAL

ii) Email: kkmondol@yahoo.co.in, kkmondol@gmail.com

iii) Phone (Mobile): 9476390585, 9083240326

3. Date of Birth: 09/09/1974

4. Educational Qualification: M.Sc., P.G.D.C.S.A., Ph.D.

5. (i) Name of the Ph. D. supervisor: Prof. (Dr.) B. S. Mazumder
Physics and Applied Mathematics Unit, Indian Statistical Institute, Kolkata

(ii) The Title of the Thesis: "MASS TRANSPORT PHENOMENA IN STEADY AND UNSTEADY FLOWS"

6. Teaching and research experience:

Employer	Position held	Place of work	Duration	Nature of work
CSIR, Govt. of India	JRF	ISI, Kolkata	07.08.2000 – 31.08.2002	Research work for Ph.D.
CSIR, Govt. of India	SRF	ISI, Kolkata	01.09.2002 – 10.06.2003	Research work for Ph.D.
Alipurduar College, Alipurduar, West Bengal	Assistant Professor (AGP – 8000/-)	Department of Mathematics ,Alipurduar College, Jalpaiguri PIN – 736 122 West Bengal	11.06.2003 – 11.05.2015	Teaching Mathematics at B.Sc. (Honours) level
Islampur College, Uttar Dinajpur, West Bengal	Associate Professor (AGP – 9000/-)	Department of Mathematics, Islampur College, Uttar Dinajpur, PIN – 733 202 West Bengal	12.05.2015 – 31.10.2017	Teaching Mathematics at B.Sc. (Honours) level

Cooch Behar Panchanan Barma University, Cooch Behar, West Bengal	Associate Professor (AGP – 9000/-)	Department of Mathematics, Cooch Behar Panchanan Barma University, Cooch Behar, PIN – 736101 West Bengal	01.11.2017 – 10.06.2018	Teaching Mathematics at M.Sc. level and guiding Ph.D. students
Cooch Behar Panchanan Barma University, Cooch Behar, West Bengal	Professor (AGP – 10000/-)	Department of Mathematics, Cooch Behar Panchanan Barma University, Cooch Behar, PIN – 736101 West Bengal	11.06.2018 – Till date	Teaching Mathematics at M.Sc. level and guiding Ph.D. students

7. Post Doctoral Research Experience:

Name of the institution	Designation & Scale of pay	Name of the post	Nature of Assignment	Duration From – To
National University of Ireland, Galway, Ireland	BOYSCAST Fellow $ 3000 per month (DST grant)	BOYSCAST Fellow	Post Doctoral Research	08.07.2009 - 07.07.2010

8. Fields of Specialization under the Subject/Discipline:

(a) Computational and Theoretical Fluid Dynamics (Ph. D., Post Doc. & current research work)

(b) MHD and Plasma Mechanics (M.Sc. & current research work)

9. Number of registered research scholars:

Sl.	Name of the Student	Title of the Thesis	Date of Registration	Supervisor	Co-supervisor	Status of the Thesis
1.	Niranjan Paul	Effects of damping and externally applied periodic force on solitary waves in plasma	28.11.2016	Prof. Prasanta Chatterjee	Prof. Kajal Kumar Mondal	Awarded on 15.06.2022
2.	Nanda Poddar (UGC - SRF)	On some dispersion phenomena of solute through different flow Geometry	19.09.2019	Dr. Kajal Kumar Mondal	----------	Awarded on 05.01.2023 **Nanda joined as a Post-doc fellow on**

						14.01.2023 in Ben-Gurion University of the Negev, Sde Boker 8499000, Israel
3.	Subham Dhar (CSIR – SRF)	A study on solute transport phenomena in time dependent and time independent flows	19.09.2019	Prof. Kajal Kumar Mondal	----------	Awarded on 28.04.2023 **Subham will join as a Post-doc fellow on 01.08.2023 at Tel Aviv University, Israel**
4.	Ashim Roy	On some aspects of integer and fractional order nonlinear dynamical systems	19.09.2019	Dr. Santanu Raut	Prof. Kajal Kumar Mondal	Awarded on 18.04.2023
5.	Anindya Paul	Studies on some evolution equations of plasma in planar and nonplanar geometry	19.09.2019	Prof. Kajal Kumar Mondal	Prof. Prasanta Chatterjee	Given his final defence on 21.06.2024
6.	Satyajit Sarkar	Supernonlinear waves, multistability and transport in plasmas	14.06.2021	Prof. Kajal Kumar Mondal	Dr. Asit Saha	Ongoing
7.	Gourab Saha (INSPIRE - SRF)	Investigation on mass transport phenomena of solute in flows	14.02.2021	Prof. Kajal Kumar Mondal	----------	Ongoing
8.	Sohel Ahmed (CSIR – JRF)	Mixing of tracers in Newtonian and Non-Newtonian flows in the context of biofluid mechanics	01.01.2023	Prof. Kajal Kumar Mondal	----------	Ongoing
9.	Susmita Das	An investigation on transport of tracers in hydrodynamics and magneto-hydrodynamics flows	21.11.2022	Prof. Kajal Kumar Mondal	----------	Ongoing
10.	Saugata Dutta (CSIR – JRF)	Some non-linear partial differential equations with special emphasis on fractals, fluids and plasmas	20.09.2022	Prof. Prasanta Chatterjee	Prof. Kajal Kumar Mondal	Ongoing

10. Honours and Awards received:

i) Qualified for JRF in the CSIR/UGC NET in 1999 and received the Fellowship from Council of Scientific and Industrial Research (CSIR), New Delhi as JRF and SRF.

ii) Awarded **BOYSCAST** (Better Opportunities for Young Scientists in Chosen Areas of Science and Technology) F**ellowship** by the Department of Science and Technology, Govt. of India in 2008 – 2009 for pursuing Post-Doctoral research work in the School of Mathematics, Statistics and Applied Mathematics, National University of Ireland, Galway, Ireland.

11. Research, Publications and Academic Contributions:

A. **Published papers in journals:**

Sl.	Title with Name of the Author(s)	Whether National or International	Corresponding Author (Yes/No)	Name of the Journal	Name of the Publisher	Year of Publication	DOI No./Vol./ Page	Impact Factor (if any)
42.	Evolution of concentration distribution and removal of a solute in MHD Channel Flow: effects of buoyancy-driven force and induced magnetic field Gourab Saha, Nanda Poddar*, Kajal Kumar Mondal*,	International	Yes	Proceedings of the Royal Society A	The Royal Society Publishing	Accepted	---	3.5
41.	Effect of an inclined magnetic field on dispersion of solute in a pulsatile flow through a channel of absorptive porous walls Susmita Das, Kajal Kumar Mondal*	International	Yes	Physics of Fluids	America Institute of Physics (AIP) Publishing	07.05.2024	doi: 10.1063/ 5.0196966	4.64
40.	Effect of phase exchange kinetics on Taylor dispersion of chemically reactive solutes in an oscillatory magnetohydrodynamics flow between two	International	Yes	Physics of Fluids	America Institute of Physics (AIP) Publishing	06.05.2024	doi: 10.1063/ 5.0203246	4.64

	parallel plates Nanda Poddar*, Gourab Saha*, Kajal Kumar Mondal*, Subham Dhar, B. S. Mazumder							
39.	Transient dispersion of a reactive solute in an oscillatory Couette flow through an anisotropic porous medium Debabrata Das, Kajal Kumar Mondal, Nanda Poddar*, Ping Wang*	International	No	Physics of Fluids	America Institute of Physics (AIP) Publishing	09.02.2024	doi: 10.1063/ 5.0184921	4.64
38.	Analysis of environmental transport of suspended sediment particles in a tidal wetland flow under the effect of floating vegetation absorption Debabrata Das, Subham Dhar, Rishi Raj Kairi, Kajal Kumar Mondal, Nanda Poddar*	International	No	Communication in Nonlinear Science and Numerical Simulation	Elsevier	05.02.2024	https://doi.org/10.1016/j.cnsns.2024.107888	3.9
37.	Analyzing the effects of suction and injection Reynolds number on the transport process in a hydromagnetic flow through a channel of reactive porous walls Susmita Das, Santanu Raut, Kajal Kumar Mondal*	International	Yes	Chinese Journal of Physics	Elsevier	22.12.2023	https://doi.org/10.1016/j.cjph.2023.12.022	5.0
36.	Dust ion acoustic bi-soliton, soliton, and shock waves in unmagnetized plasma with Kaniadakis-distributed electrons in planar and nonplanar geometry	International	No	The European Physical Journal D	Springer	06.06.2023	https://doi.org/10.1140/epjd/s10053-023-00676-8	1.8

	Santanu Raut, Kajal Kumar Mondal, Prasanta Chatterjee, Subrata Roy*							
35.	Analyzing the impact of boundary slip and absorption effects on the dispersion of solute in a pulsatile channel flow of Casson fluid under magnetic field Debabrata Das, Sachin Shaw, Kajal Kumar Mondal, Rishi Raj Kairi*	International	No	The European Physical Journal Plus	Springer	02.05.2023	https://doi.org/10.1140/epjp/s13360-023-03973-8	3.758
34.	On scalar transport in an oscillatory Couette–Poiseuille flow under the effects of heterogeneous and bulk chemical reactions: A multi-scale approach Nanda Poddar, Debabrata Das, Subham Dhar, Kajal Kumar Mondal*	International	Yes	Physics of Fluids	America Institute of Physics (AIP) Publishing	28.04.2023	https://doi.org/10.1063/5.0146281	4.64
33.	Effect of Rayleigh number on transport of solute in a hydromagnetic natural convective flow through a vertical channel with chemical reaction Gourab Saha, Nanda Poddar, Subham Dhar, B.S. Mazumder, Kajal Kumar Mondal*	International	Yes	International Communications in Heat and Mass Transfer	Elsevier	21.03.2023	https://doi.org/10.1016/j.icheatmasstransfer.2023.106733	7.0
32.	Solute dispersion phenomena in a free and forced convective flow with boundary reactions Gourab Saha, Nanda Poddar*, Subham Dhar,	International	Yes	European Journal of Mechanics – B/Fluids	Elsevier	21.03.2023	https://doi.org/10.1016/j.euromechflu.2023.03.005	2.6

	Bijoy Singha Mazumder, Kajal Kumar Mondal*							
31.	Analysis of solitary waves on non-planar geometry in a weakly ionized collisional plasma with Cairns-Gurevich distributed electrons Anindya Paul, Niranjan Paul, Prasanta Chatterjee, Kajal Kumar Mondal*	International	Yes	Brazillian Journal of Physics	Springer	19.11.2022	https://doi.org/10.1007/s13538-022-01217-1	1.364
30.	Dispersion of fine settling particles in a tidal wetland flow Subham Dhar, Debabrata Das, Nanda Poddar, Kajal Kumar Mondal*	International	Yes	Journal of Hydrology	Elsevier	10.11.2022	https://doi.org/10.1016/j.jhydrol.2022.128701	6.4
29.	Influences of external excitations on solitary waves in nonthermal dusty plasma A. Paul*, Niranjan Paul*, K. K. Mondal*, P. Chatterjee*	International	Yes	Plasma Physics Report	Springer	27.10.2022	doi: 10.1134/S1063780X22100063	1.133
28.	On solute dispersion in an oscillatory magneto-hydrodynamics porous medium flow under the effect of heterogeneous and bulk chemical reaction Nanda Poddar, Gourab Saha, Subham Dhar, Kajal Kumar Mondal*	International	Yes	Physics of Fluids	America Institute of Physics (AIP) Publishing	02.09.2022	https://doi.org/10.1063/5.0101603	4.64
27.	Multi-scale analysis for transport of fine settling particles through an ice-covered channel in a	International	Yes	International Journal of Sediment Research	Elsevier	09.06.2022	https://doi.org/10.1016/j.ijsrc.2022.06.001	3.6

	laminar flow condition Subham Dhar, Nanda Poddar, B.S. Mazumder, Kajal Kumar Mondal*							
26.	Coexisting wave features and various nonlinear waves for Schrödinger equation in superthermal dusty plasma Satyajit Sarkar, Punam Kumari Prasad, Asit Saha*, Kajal Kumar Mondal	International	No	Physica Scripta	IOP Publishing	28.02.2022	doi: 10.1088/1402-4896/ac55bc	3.081
25.	Influence of external periodic force on ion acoustic waves in a magnetized dusty plasma through forced KP equation and modified forced KP equation Ashim Roy, Kajal Kumar Mondal, Prasanta Chatterjee, Santanu Raut*	International	No	Brazillian Journal of Physics	Springer	25.02.2022	https://doi.org/10.1007/s13538-021-01038-8	1.364
24.	Multi-scale approach to analyze the dispersion of solute under the influence of homogeneous and inhomogeneous reactions through a channel Debabrata Das, Nanda Poddar, Subham Dhar, Rishi Raj Kairi, Kajal Kumar Mondal*	International	Yes	International Communications in Heat and Mass Transfer	Elsevier	10.11.2021	https://doi.org/10.1016/j.icheatmasstransfer.2021.105709	7.0
23.	Non-stationary Solitary Wave Solution for Damped Forced Kadomtsev–Petviashvili	International	No	International Journal of Applied and Computational	Springer	01.11.2021	https://doi.org/10.1007/s40819-021-01168-2	2.31

	Equation in a Magnetized Dusty Plasma with q-Nonextensive Velocity Distributed Electron Santanu Raut, Ashim Roy, Kajal Kumar Mondal, Prasanta Chatterjee, Naresh M. Chadha*			Mathematics				
22.	On dispersion of solute in a hydromagnetic flow between two parallel plates with boundary absorption	International	No	Physics of Fluids	America Institute of Physics (AIP) Publishing	17.08.2021	https:// doi.org/ 10.1063/5.0060404	4.64
21.	Semi-analytical study on environmental dispersion of settling particles in a width-independent wetland flow Nanda Poddar, Susmita Das, Subham Dhar, Kajal Kumar Mondal*	International	Yes	Environmental Fluid Mechanics	Springer	12.08.2021	https://doi.org/10.1007/s10652-021-09809-2	2.3
20.	Ion-neutral collisional effect on solitary waves in weakly ionized plasma with Cairns-Gurevich distribution of electrons Niranjan Paul*, Rustam Ali, Kajal Kumar Mondal, Prasanta Chatterjee	International	No	International Journal of Applied and Computational Mathematics	Springer	04.08.2021	https://doi.org/10.1007/s40819-021-01113-3	2.31
19.	Effects of bulk degradation and boundary absorption on dispersion of contaminant in wetland flow Nanda Poddar, Subham	International	Yes	International Journal of Heat and Mass Transfer	Elsevier	15.07.2021	https://doi.org/10.1016/j.ijheatmasstransfer.2021.121669	5.2

	Dhar, Bijoy Singha Mazumder, Rishi Raj Kairi, Kajal Kumar Mondal*							
18.	Two-dimensional ion-acoustic solitary waves obliquely propagating in a relativistic rotating magnetized electron-positron-ion plasma in the presence of external periodic force Santanu Raut, Kajal Kumar Mondal, Prasanta Chatterjee, Ashim Roy*	International	No	Pramana	Springer	30.04.2021	https://doi.org/10.1007/s12043-021-02104-1	2.8
17.	An exact analysis of scalar transport in hydromagnetic flow between two parallel plates: a multi-scale approach Nanda Poddar, Subham Dhar, Bijoy Singha Mazumder, Kajal Kumar Mondal*	International	Yes	Proceedings of the Royal Society A	The Royal Society Publishing	21.04.2021	https://doi.org/10.1098/rspa.2020.0830	3.5
16.	Propagation of dust-ion-acoustic solitary waves for Damped Modified Kadomtsev-Petviashvili-Burgers equation in dusty plasma with a q-nonextensive nonthermal electron velocity distribution Santanu Raut, Kajal Kumar Mondal, Prasanta Chatterjee, Ashim Roy*	International	No	Bulletin of the Spanish Society of Applied Mathematics (SeMA journal)	Springer	01.03.2021	https://doi.org/10.1007/s40324-021-00242-5	---
15.	Layer-adapted meshes for solute dispersion in steady flow through an annulus with wall	International	Yes	Korea - Australia Rheology Journal	Springer	27.02.2021	https://doi.org/10.1007/s13367-021-0002-4	1.3

	absorption: application to a catheterized artery Nanda Poddar, Kajal Kumar Mondal*, Niall Madden							
14.	Numerical Study on Dispersion of Fine Settling Particles in a Depth Dominated Wetland Flow S. Dhar, N. Poddar, R. R. Kairi, B. S. Mazumder , K. K. Mondal*	International	Yes	Communications in Nonlinear Science and Numerical Simulation	Elsevier	13.01.2021	https://doi.org/10.1016/j.cnsns.2021.105707	4.02
13.	Influences of viscosity and damping on non-stationary ion-acoustic solitary wave solution of Damped Kadomtsev-Petviashvili-Burgers equation in an unmagnetized electron-positron-ion plasma Niranjan Paul, Rustam Ali, Kajal Kumar Mondal, Prasanta Chatterjee*	National	No	Bulletin of the Calcutta Mathematical Society	Calcutta Mathemati-cal Society	Dec, 2020	**112,** (5) 401–416	---
12.	Analytical solitary wave solution of dust ion acoustic waves in nonextensive plasma in the framework of damped forced Korteweg–de Vries–Burgers equation N Paul*, K. K. Mondal, R. Ali, P. Chatterjee	International	No	Indian Journal of Physics	Springer	19.11.2020	https://doi.org/10.1007/s12648-020-01929-7	1.778
11.	On Dispersion of Solute in Steady Flow Through a Channel with Absorption Boundary: An Application to	International	First	Theoretical and Computational Fluid Dynamics	Springer	08.07.2020	https://doi.org/10.1007/s00162-020-00539-7	3.4

	Sewage Dispersion Kajal Kumar Mondal, Subham Dhar*, Bijoy Singha Mazumder							
10.	Propagation of ion-acoustic solitary wave solution for damped forced Zakharov Kuznetsov equation in a relativistic rotating magnetized electron-positron-ion plasma Kajal Kumar Mondal, Ashim Roy, Prasanta Chatterjee, Santanu Raut*	International	First	International Journal of Applied and Computational Mathematics	Springer	03.04.2020	https://doi.org/10.1007/s40819-020-0801-1	2.31
9.	Signature of chaos and mutistability in a Thomas-Fermi plasma Asit Saha, Satyajit Sarkar, Santo Banerjee*, Kajal Kumar Mondal	International	No	The European Physical Journal Special Topics	Springer	26.03.2020	https://doi.org/10.1140/epjst/e2020-900237- 2	2.8
8.	Analytical solitary wave solution of the dust ion acoustic waves for the damped forced modified Korteweg-de Vries equation in q-nonextensive plasmas Laxmikanta Mandi, Kajal Kumar Mondal, Prasanta Chatterjee*	International	No	The European Physical Journal Special Topics	Springer	06.12.2019	https://doi.org/10.1140/epjst/e2019-900047-4	2.8
7.	Bifurcation Analysis of Ion-Acoustic Super periodic Waves in Dense Plasmas Punam Kumari Prasad, Satyajit Sarkar, Asit Saha*, Kajal Kumar Mondal	International	No	Brazillian Journal of Physics	Springer	12.08.2019	https://doi.org/10.1007/s13538-019-00697-y	1.364

6.	Effect of Dust Ion Collision on Dust Ion Acoustic Solitary Waves for Nonextensive Plasmas in the Framework of Damped Korteweg–de Vries–Burgers Equation Niranjan Paul*, Kajal Kumar Mondal, Prasanta Chatterjee	International	No	Zeitschrift für Naturforschung A (ZNA)	De Gruyter	22.05.2019	https://doi.org/10.1515/zna-2018-0519	1.712
5.	Dispersion of fine settling particles from an elevated line-source in an oscillatory turbulent flow Kajal Kumar Mondal, B. S. Mazumder*	International	First	European Journal of Mechanics – B/Fluids	Elsevier	14.02.2008	https://doi.org/10.1016/j.euromechflu.2007.11.005	2.6
4.	On dispersion of settling particles from an elevated source in an open-channel flow Kajal Kumar Mondal, B. S. Mazumder*	International	First	Journal of Computational and Applied Mathematics	Elsevier	15.08.2006	https://doi.org/10.1016/j.cam.2005.04.068	2.4
3.	On solute transport in oscillatory flow through an annular pipe with a reactive wall and application to a catheterized artery B. S. Mazumder*, Kajal Kumar Mondal,	International	No	Quarterly Journal of Mechanics and Applied Mathematics	Oxford University Press	01.08.2005	https://doi.org/10.1093/qjmam/hbi009	0.9
2.	On the solute dispersion in a pipe of annular cross-section with absorption boundary Kajal Kumar Mondal, B. S. Mazumder*	International	First	Z. Angew. Math. Mech.	Wiley	28.04.2005	https://doi.org/10.1002/zamm.200210180	2.3
1.	On solute dispersion in	International	First	International Journal of	Elsevier	January, 2005	https://doi.org/10.1016/j.ij	3.2

	pulsatile flow through a channel with absorbing walls Kajal Kumar Mondal, B. S. Mazumder*			Non-linear Mechanics			nonlinmec.2004.05.017	

B (i) **Articles/Chapters published in Books:**

Sl.	Title	Sole Authorship/ Edited	Name of the Publisher	Year of Publication	ISSN/ISBN No.
13.	Numerical modelling of dispersion of suspended particles in a turbulent open channel flow: A fitted operator approach	*Naresh M. Chadha, Nanda Poddar, Niall Madden, Kajal Kumar Mondal*	Nova Science Publishers, New York	2024	https://doi.org/10.52305/VTTP1252 979-8-89113-751-6 (Hardcover) 979-8-89113-818-6 (Ebook)
12.	Dynamical Properties of Shock and Snoidal Waves in a Superthermal Multi-ion Dusty Plasma	*Satyajit Sarkar, Ruchi Thapa, Asit Saha, Kajal Kumar Mondal*	Springer	2022	https://doi.org/10.1007/978-981-16-6890-6_70
11.	Effect of reversible reaction on concentration distribution of solute in a Couette flow	*Nanda Poddar, Subham Dhar, Kajal Kumar Mondal*	Springer	2022	https://doi.org/10.1007/978-3-030-99792-2_33 2213-8684
10.	An analytical approach to study the environmental transport of fine settling particles in a wetland flow	*Subham Dhar, Nanda Poddar, Kajal Kumar Mondal*	Springer	2022	https://doi.org/10.1007/978-3-030-99792-2_29 2213-8684
9.	Analysis of Solute Dispersion through an Open Channel under the Influence of Suction or Injection	*Gourab Saha, Nanda Poddar, Subham Dhar, Kajal Kumar Mondal*	Springer	2022	https://doi.org/10.1007/978-3-030-99792-2_40

					2213-8684
8.	Effects of slip velocity and bed absorption on transport coefficient in a wetland flow	*Debabrata Das, Subham Dhar, Nanda Poddar, Rishi Raj Kairi, Kajal Kumar Mondal*	Springer	2022	https://doi.org/10.1007/978-3-030-99792-2_37 2213-8684
7.	Dust-ion collisional and periodic forcing effects on solitary wave in a plasma with Cairns-Gurevich electron distribution	*Anindya Paul, Niranjan Paul, Kajal Kumar Mondal, Prasanta Chatterjee*	Springer	2022	https://doi.org/10.1007/978-3-030-99792-2_18 2213-8684
6.	On transport phenomena of solute through a channel with an inclined magnetic field	*Susmita Das, Kajal Kumar Mondal*	Springer	2022	https://doi.org/10.1007/978-3-030-99792-2_27 2213-8684
5.	Dynamical properties shock and snoidal waves in a superthermal multi-ion dusty plasma	*Satyajit Sarkar, Ruchi Thapa, Asit Saha, Kajal Kumar Mondal*	Springer	2022	doi: 10.1007/978-981-16-6890-6_70
4.	Analytical Solution of a Time-Fractional Damped Gardner Equation Arising from a Collisional Effect on Dust-ion-acoustic Waves in a Dusty Plasma with Bi-Maxwellian Electrons	*Naresh M. Chadha, Santanu Raut, Kajal Kumar Mondal, Shruti Tomar*	Chapman and Hall/CRC	2022	https://doi.org/10.1201/9781003263517 9781003263517
3.	Application of finite element method in steady transport processes	*Kajal Kumar Mondal*	Progressive Publishers, Kolkata	2016	978-81-8064-231-9
2.	On dispersion of fine settling particles in a turbulent open channel flow: A fitted operator approach	*Kajal Kumar Mondal*	Readers Service, Kolkata	2015	978-93-82623-51-9
1.	Improved mathematical and numerical modeling of dispersion of a solute from a continuous source	*Niall Madden, Kajal Kumar Mondal*	Springer	2011	978– 3– 642– 19664–5

(ii) **Full papers in Conference Proceedings :**

Sl. No	Title with page number	Details of Conference Publication	ISBN/ISSN
4.	Dynamical properties shock and snoidal waves in a superthermal multi-ion dusty plasma *Satyajit Sarkar, Ruchi Thapa, Asit Saha, Kajal Kumar Mondal*	Proceedings of the seventh international conference on Mathematics and computing Springer, 2022	DOI: 10.1007/978-981-16-6890-6_70
3.	Near field dispersion of solute in a turbulent open channel flow from continuous elevated sources *Kajal Kumar Mondal*	Proceedings of the UGC Sponsored State Level Seminar on Recent Advances in Basic Science, 24.09.2016	978-81-931261-6-5
2.	A computational study on resolving layer phenomena for the stationary convection diffusion problems *Kajal Kumar Mondal*	Proceedings of recent advances in the application of mathematical analysis and computational techniques in applied sciences, 02.12.2011 – 04.12.2011	978-81-909694-2-0
1.	Measurements of turbulent flow over an artificial wave form in an open channel by 3-D Acoustic Doppler Velocimeter *B. S. Mazumder, Dibyendu Pal, Koeli Ghosal, Kajal kumar Mondal*	Proceedings of Conference on Hydraulics, Water Resources and Ocean Engineering, HYDRO-2003	HYDRO-2003, Indian Society for Hydraulics, Pune

C) **Ongoing and Completed Research Projects and Consultancies：**

Sl. No	Title	Agency (Funding, Commissioning and/or Collaborating)	Period	Grant(s)/ Amount mobilized (so far) in Rs. (Lakhs)	Whether Principal Investigator/ Co-investigator or Consultant/Quality evaluator
3.	On dispersion phenomena of solute in time independent and time dependent flows: A computational approach (Ongoing, Started on 03.09.2019)	Govt. West Bengal, Department of Higher Education, Science & Technology and Biotechnology	3 Years	**8.80 Lakh**	Principal Investigator
2.	On Solute Dispersion in Advection Dominated Flows	**UGC**	2 Years	**2.64 Lakh**	Principal Investigator

	(Completed)	**(2017)**			
1.	A Computational Study on Solute Transport Phenomena in Convection Dominated Flows (Completed)	UGC **(2012)**	2 Years	1.63 Lakh	Principal Investigator

d)**Conference/Seminar/Workshop paper presentation:**

Sl. No.	Title of the Paper presented	Title of Conference / Seminar	Organised by	Whether International / National/State/Regional / University/College level
26.	Dispersion phenomena of solute in wetland flows (Invited talk)	International Conference on Applied Mathematics (27.06.2024 – 28.06.2024)	Department of Applied Mathematics, Vidyasagar University	International
25.	On transport process in wetland flows (Invited talk)	6th Regional Science and Technology Congress: Region - 1 (15.01.2024 – 16.01.2024)	Jalpaiguri A.C. College in association with Department of Science and Technology & Biotechnology, Government of West Bengal	Regional
24.	Transport phenomena of solute in wetland flows: A numerical approach (Invited talk)	08.12.2023	Cooch Behar Panchanan Barma University in collaboration with The Institute of Cross-Cultural Studies and Academic Exchange, Burlington, NC, USA	International
23.	Dispersion phenomena of solute in wetland flows (Invited talk)	06.10.2023	Department of Mathematics, Surya Sen Mahavidyalaya, Siliguri	College
22.	Mass transport phenomena of solute in wetland flows: A numerical approach	International Conference on Nonlinear Dynamics	Sikkim Manipal Institute of Technology,	International

	(Invited talk)	and Applications (09.03.2022 – 11.03.2022)	Rangpo, Sikkim	
21.	On dispersion of solute through different flow geometries: applications of ordinary and partial differential equations (Invited talk)	08.07.2021	Department of Mathematics, Coochbehar College	College
20.	Environmental dispersion of fine settling particles in a wetland flow	International Interdisciplinary Conference on Cognitive Science, Language and Reality (09.01.2020 – 11.01.2020)	Cooch Behar Panchanan Barma University in collaboration with The Institute of Cross-Cultural Studies and Academic Exchange, Burlington, NC, USA	International
19.	On dispersion of solute in a turbulent open channel flow from continuous elevated source (Invited talk)	National Workshop on Professional Development of Science Teachers and Researchers of Higher Educational Institutions (18.11.2019 – 24.11.2019)	A. B. N. Seal College, In association with Directorate of Higher Education, Government of West Bengal and in collaboration with Bioinformatics Facility, University of North Bengal	National
18.	Computational Fluid Dynamics: Its applications and challenges	International Seminar on The History of Science & Technology – A Journey From Metal Age to E-Age (12.03.2019)	Alipurduar College, Alipurduar in Collaboration with College of Science and Technology, Royal University of Bhutan	International

17.	Near field dispersion of solute in a turbulent open channel flow from continuous elevated sources: An application of differential equations (Invited talk)	22.09.2018	Salesian College	College
16.	On solute dispersion in an oscillatory flow through an annular pipe: Application to a catheterized artery	International Seminar on Changing World, Changing Scenario: Challenges and Developments in Contemporary Times (27.03.2018 – 28.03.2018)	Islampur College, Islampur, Uttar Dinajpur	International
15.	Numerical difficulties and challenges in environment modelling	International Conference on Environmentalism, Globalism and Morality (10.01.2018 – 12.01.2018)	The Institute of Cross-Cultural Studies and Academic Exchange, ELON, EC, USA in collaboration with Alipurduar College, Maynaguri College and Cooch Behar Pancnanan Barma University	International
14.	On steady-state solute dispersion through an annular pipe in convection dominated flows	International Interdisciplinary Seminar on Contemporary Developments in Social and Basic Sciences in Times of Global Crisis (28.03.2017 – 29.03.2017)	Surya Sen Mahavidyalaya, Siliguri	International
13.	Solute dispersion through an annular pipe in steady state convection dominated flows	State Level Seminar on Recent Advances in Basic Science,	Islampur College, Uttar Dinajpur	State

	(With Niranjan Paul)	(24.09.2016)		
12.	Near field dispersion of solute in a turbulent open channel flow from continuous elevated sources	State Level Seminar on Recent Advances in Basic Science, (24.09.2016)	Islampur College, Uttar Dinajpur	State
11.	Solute transport in oscillatory flow through an annular pipe with a reactive wall	National Seminar on Frontiers in Science and Technology Towards National Development (10.04.2016 – 11.04.2016)	A. B. N. Seal College, Cooch Behar	National
10.	Application of Finite Element Method in Steady Transport Processes	National Seminar on Trends and Developments in Science, Social Science and Humanities (22.08.2015)	Islampur College, Uttar Dinajpur	National
9.	Application of fitted operator method on dispersion of fine particles in an open channel flow	International Conference on Modern Trends in Social and Basic Sciences (27.03.2015 – 28.03.2015)	Alipurduar College, Alipurduar	International
8.	Dispersion of solute in oscillatory flow through an annular pipe	National Conference on Emerging Trends in Physics of Fluids and Solids (06.03.2014 – 07.03.2014	Department of Mathematics, Jadavpur University	National
7.	Numerical modelling of dispersion of suspended particles in an open channel flow: A fitted operator approach	International Conference on Emerging Trends in Applied Mathematics (12.02.2014 –	Department of Applied Mathematics, University of Calcutta	International

		14.02.2014)		
6.	Application of layer adapted meshes on dispersion of fine particles in an turbulent open channel flow	3rd International Conference on Frontiers of Mathematics and Applications (29.01.2014 – 31.01.2014)	Department of Mathematics, University of Burdwan	International
5.	Layer adapted meshes for steady-state convection dominated convection-diffusion problems	National Conference on Emerging Trends in Physics of Fluids and Solids (27.02.2013 – 28.02.2013)	Department of Mathematics, Jadavpur University	National
4.	A computational study on resolving layer phenomena for the stationary convection-diffusion problems	National Seminar on Recent Advances in the Application of Mathematical Analysis and Computational Techniques in Applied Sciences (02.12.2011 – 04.12.2011)	Department of Mathematics, Siliguri College, Siliguri	National
3.	A computational study on resolving layer phenomena for the convection dominated advection-diffusion problems	Indo-US bilateral workshop on Ecological health of rivers (01.11.2010 – 03.11.2010)	ISI, Kolkata	International
2.	A computational study of a fluid flow problem featuring an interior layer for near field contamination	Seminar on Non-Linear Dynamics and Astrophysics (09.10.2010)	Department of Mathematics, NBU & IUCAA Resource Centre, Dept. of Physics, NBU	University
1.	Dispersion in pulsatile flow through a channel with absorbing walls	National Seminar on Recent Trends in	Department of Mathematics, University of	National

		Mathematics (Dec, 2002)	Burdwan	

e) Training courses:

Sl.No	Name of the course	Duration	Organized by
4.	Refresher Course in Information and Communication Technology (Interdisciplinary)	21 days (26.11.2014 – 16.12.2014)	ASC, University of Burdwan
3.	Refresher Course in Mathematics (Interdisciplinary)	21 days (04.01.2012 – 24.01.2012)	ASC, University of North Bengal
2.	8th Annual Workshop on Numerical Methods for Problems with Layer Phenomena	2 days (21.01.2010 – 22.01.2010)	Department of Mathematics and Statistics, University of Limerick, Limerick, Ireland
1.	Orientation Programme	28 days (06.06.2006 – 03.07.2006)	ASC, University of Burdwan

f) Chaired a session/ Judge in Conference/Seminar/Workshop etc.:

Sl. No.	Acted as	Title of Conference / Seminar	Organised by	Whether International / National/State/Regional / University/College level
11.	Chaired a session	Intraday National Seminar on Algebra, Number Theory and Applied Mathematics (18.07.2024)	Department of Mathematics, University of North Bengal	National
10.	Member of the Advisory Committee	International Seminar on Topology, Algebra and Applications (12.03.2024 –	Department of Mathematics, University of North Bengal	International

		14.03.2024)		
9.	Chaired a session	International Conference on Nonlinear Dynamics and Applications (09.03.2022 – 11.03.2022)	Sikkim Manipal Institute of Technology, Rangpo, Sikkim	International
8.	Chaired a session	International Interdisciplinary Conference on Cognitive Science, Language and Reality (09.01.2020 – 11.01.2020)	Cooch Behar Panchanan Barma University in collaboration with The Institute of Cross-Cultural Studies and Academic Exchange, Burlington, NC, USA	International
7.	Judge	4th Regional Science & Technology Congress, 2019 (18.12.2019 – 19.12.2019)	Alipurduar College Jointly with Department of Higher Education, Science & Technology and Bio Technology, Government of West Bengal	Regional
6.	Chaired a session	International Seminar on The History of Science & Technology – A Journey From Metal Age to E-Age (12.03.2019)	Alipurduar College, Alipurduar in Collaboration with College of Science and Technology, Royal University of Bhutan	International
5.	Chaired a session	International	Surya Sen Mahavidyalaya,	International

		Interdisciplinary Conference on Environment, Peace and Morality: East & West (11.01.2019 – 13.01.2019)	Siliguri in collaboration with The Institute of Cross-Cultural Studies and Academic Exchange, Burlington, NC, USA	
4.	Chaired a session	Two Days International Seminar on Recent Advances in Mathematical Sciences and Their Applications (30.08.2018 – 31.08.2018)	Surys Sen Mahavidyalaya, Siliguri	International
3.	Chaired a session	International Seminar on Changing World, Changing Scenario: Challenges and Developments in Contemporary Times (27.03.2018 – 28.03.2018)	Islampur College, Uttar Dinajpur	International
2.	Judge	2nd Regional Science & Technology Congress, 2017 (07.12.2017 – 08.12.2017)	Siliguri College Jointly with Department of Higher Education, Science & Technology and Bio Technology, Government of West Bengal	Regional
1.	Chaired a session	International Interdisciplinary Seminar on Contemporary Developments in Social and Basic Sciences in Times of Global Crisis (28.03.2017 –	Surya Sen Mahavidyalaya, Siliguri	International

		29.03.2017)		

12. Brief summary of previous and current research work:

During the course of my doctoral studies I investigated problems related to the longitudinal dispersion of passive scalar contaminants in both steady and unsteady flow cases. Laminar and turbulent types of flow through conduits with or without particle settling velocities were considered. Such transport problems occur in a wide range of applications ranging from physiological fluid dynamics to environmental fluid dynamics.

The aim of the work was to conduct a numerical study to understand the basic mechanism of mass transportation in longitudinal direction, and to predict the dispersion coefficient, mean concentration distribution, iso-lines of concentration in a vertical plane for a given time. The corresponding profiles change their nature in different regimes over a period of time. Standard finite-difference method was used for the modeling purpose and results obtained were tested and verified against the data available in the literature.
One of the significant contributions of my work was to analyze the dispersion phenomena through a catheterized artery with a first-order heterogeneous boundary reaction at the wall.

Followings are the summary of my research work:

(i) to understand the basic mechanism of mass transport phenomena in steady and unsteady (laminar or turbulent) flows;
(ii) to provide a numerical framework for the interpretation of contaminant spreading in certain flow geometries;
(iii) to study how the tracer molecules are depleted or protected by the first order heterogeneous boundary reaction;
(iv) to determine the dispersion coefficient and axial mean concentration distribution in the longitudinal direction due to the combined action of boundary reaction and the flow oscillation;
(v) to study the effect of settling velocity of suspended particles on the dispersion process;
(vi) to understand, how the spreading of suspended particles are influenced by the combined action of steady or oscillatory shear flow, settling velocity and the corresponding eddy diffusivity over the rough bed surface for all time period and to find the iso-concentration lines in the vertical plane.

During my Ph. D. dissertation the main focus was on theoretical aspects of the study. However, I had a hand-on experience to deal with Acoustic Doppler Velocimeter (ADV) and High Speed Video Camera (HSVC) to study turbulent open-channel flow at the Fluvial Mechanics Laboratory, ISI, Kolkata.

I worked as a visiting research fellow in School of Mathematics, Statistics, and Applied Mathematics, National University of Ireland, Galway from 08.07.2009 – 07.07.2010. The one year visit had been funded by Department of Science and Technology (DST) under BOYSCAST Post-Doctoral fellowship scheme. I worked on “Designing certain efficient numerical/qualitative

methods for solving differential equations" related to hydrodynamics and solute transportation in the regions of strong tide-induced currents. My supervisor there was Professor Dr. N. Madden, School of Mathematics, Statistics, and Applied Mathematics, National University of Ireland, Galway. The work was being carried out in collaboration with a group of researchers from Marine Modelling Centre, National University of Ireland, Galway, led by Dr. M. Hartnett.

Recently, I am studying the dispersion phenomena of solute in complex flow geometry using analytical methods (Multi scale homogenization technique, Gill-Sankarasubramanian method etc.), semi-analytical methods and also through various numerical approaches. Also, I am exploring my research in the field of plasma mechanics to study the different non-linear phenomena of plasma.