UNIVERSITY OF CALCUTTA

FACULTY ACADEMIC PROFILE/ CV

Full name of the faculty member: DR. SUSMITA SARKAR

Designation: PROFESSOR

Specialisation: Plasma Dynamics and Fractional Calculus

Contact information :

B-13/2 Payamanti Cooperative Housing Society, ECTP Phase-I, Kolkata -107.
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Institutional e-mail: ssappmath@caluniv.ac.in

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Academic qualifications:

College/ university from which the degree was obtained	Abbreviation of the degree
Presidency College, University of Calcutta	B.Sc (Mathematics Honours)
University of Calcutta	M.Sc
University of Calcutta	M.Phil
Jadavpur university	Ph.D

Positions held/ holding:

i. Served as a lecturer in the Department of Applied Mathematics with Oceanography and Computer Programming at Vidyasagar University, Midnapore during 12.02.90 -11.09.90.

ii. Served as a lecturer in the Department of Mathematics, Burdwan University during 12.09.90-06.05.92

iii. Served as a lecturer in the Department of Mathematics, Jadavpur University during 07.05.92-11.02.95 and senior lecturer from 12.02.95 - 01.07.1997.

iv. Served as a lecturer/senior lecturer in the Department of Applied Mathematics, Calcutta University during02.07.97-11.02.99, Reader from 12.02.99-11.02.2007, Professor from12.02.2007-till date

Research interests:

i) Working in the field of Plasma Physics since 1987. Four students have been awarded Ph.D. degree in this field. One student has submitted thesis and two students are presently registered for Ph.D degree in this field.

ii) Working on Fractional Calculus since 2013 in collaboration with Bhabha Atomic Research Centre, Mumbai. One student has submitted thesis and two students are registered for Ph.D. degree in this field.

iii) Also involved with the stability analysis of epidemic models in Mathematical Biology. In this field, two students have awarded Ph.D degree and two students are registered for Ph.D degree.

Research guidance :

Number of researchers awarded M.Phil / Ph.D degrees :

M.Phil-2 (M.Phil course is not running in the Department since 2009)
Ph.D- 6

Number of researchers pursuing M.Phil/ Ph.D :

M.Phil:- M.Phil course is not running in the Department since 2009
Ph.D: Registered-**6**
Enrolled- **7**

Research Projects:

i. Principal Investigator of the Research Project " Characterization of Unreachable (Holderian) Functions via Local Fractional Derivative and Deviation Functions "funded by Board of Research in Nuclear Science (BRNS), Govt. of India for the period 2014-2017.

ii. Co-investigator of the project "Nonlinear Dynamic and Thermodynamic models of some complex ecosystems" funded by UGC for the period 2011-2014.

iii. Principal Investigator of the project "Study of wave characteristics in a dusty plasma due to different charging mechanisms" funded by UGC under University with Potential for Excellence(UPE) scheme for the period2007-2012.

iv. Principal Investigator of the UGC funded Major Research Project "Study of linear and nonlinear wave characteristics in dusty plasma" during2005-2007.

Acted as co-investigator of several research projects in Jadavpur University funded by DST and DAE.

List of Publications:

Number of Publications: 95

1. **Study of memory effect in an EOQ model with fractional polynomial demand rate under fuzzy environment**
   R. Pakhira, U. Ghosh, S. Sarkar,L.N.Mishra; Discontinuity,Nonlinearity and Complexity, (2020) (accepted)

2. **Qualitative analysis and optimal control of a two-strain Dengue model with its co-infections**
   J.k. Ghosh, U. Ghosh, Susmita Sarkar, International Journal of Applied and Computational Mathematics,(2020)(accepted)

3. **The Effect of Negative Ion Population on Dust Acoustic Wave Propagation in a Lorenrtzian Dusty Plasma**
   S.Paul, R.Denra, Susmita Sarkar, Euro Phys. Journ D,74,131 (2020)

4. **Study of Nonlinear Dust Acoustic Wave Propagation in a Lorentzian Dusty Vlasov Plasma in Presence of Negative Ions.**
   S.Paul, R.Denra, Susmita Sarkar, Ind. Journ of Phys,94(10) 1653 (2020)

5. **Analytical Study of D dimensional Fractional Klein Gordon Equation with a fractional vector plus a Scalar Potential**
   T.Das, U.Ghosh,Susmita Sarkar, S.Das ,Pramana Journ of Phys, 94,33 (2020)

6. **Study of memory effect in an inventory model for deteriorating items with partial backlogging**
   R.Pakhira,U.Ghosh,S.Sarkar, Computers & Industrial Engineering, **148(**2020)

7. **Study of Memory Effect between two memory dependent inventory models**
   R.Pakhira, U.Ghosh, Susmita Sarkar, Journ of Fractional Calculus and Applications(2020) **11(1),** 138-155

8. **Study of Memory Effect in an Economic Order Quantity Model for Completely Backlogged Demand During shortage.**
   R.Pakhira, U.Ghosh, Susmita Sarkar, V.N.Misra, Prog. Frac. Differ Appl. (Accepted) (To be published in 2020)

9. **Mathematical Model of Zika Virus Dynamics with Vector Control and Sensitivity Analysis**
   S.Biswas, U.Ghosh and S.Sarkar, Infectious Disease Modelling 5, 23-41 (2020).

10. **Prediction of Ventricular Hypertrophy of Heart using Fractional Calculus**.
    S. Sengupta, U. Ghosh, S. Sarkar and S. Das, Journal of Applied Nonlinear Dynamics, 9, 287 (2020)

11. **Covid-19 Pandemic in India: A Mathematical Model Study**
    S.Biswas, J.Ghosh, S.Sarkar and U.Ghosh, Nonlinear Dynamics, 1-17(2020)DOI: 10.1007/s11071-020-05958-z.

12. **Study of Dust Acoustic Wave Propagation in a Lorentzian Dusty Plasma in Presence of Secondary Electron Emission**
    S.Paul, R.Denra, Susmita Sarkar, Braz Journ of Phys, 49, 738 (2019)

13. **Higher Dimensional Fractional Time Independent Schrodinger Equation via Fractional Derivative With Generalized Pseudoharmonic Potential**
    T.Das, U.Ghosh,Susmita Sarkar, S.Das , Pramana-J.Phys 93,76 (2019)

14. **Qualitative Analysis and Optimal Control Strategy of an SIR Model with Saturated Incidence and Treatment.**
    J.K.Ghosh, U.Ghosh, M.H. A. Biswas, Susmita Sarkar, Differential Equations and Dynamical Systems (2019) (Accepted)

15. **Investigation of Left Ventricular Hypertrophy using Mean DeviationFunction**
    S. Sengupta, U Ghosh, Susmita Sarkar, S Das(2019). Journal of Physics Through Computation (2019) Vol. 2: 41-46Clausius Scientific Press, Canada DOI: 10.23977/jptc.2019.21009ISSN 2617-1163.

16. **Study of Memory effect in an Inventory model with price dependent demand**
    R.Pakhira, U.Ghosh, S.Sarkar, Journal of Applied Economic Sciences, 2019, XIV, **2(64)**, 360-367

17. **Study of Memory Effect in an Economic Order Quantity Model with Quadratic Type Demand Rate.**
    R.Pakhira, U.Ghosh, Susmita Sarkar, Computational Methods in Science and Technology, 25 (2), 71 (2019)

18. **Study of memory effect in an inventory model with constant deterioration rate**,
    R.Pakhira, U.Ghosh, S.Sarkar, V.N.Mishra, Journal of applied and non-linear dynamics, (2019) (Accepted).

19. **Study of Memory Effect in a Fuzzy Economic Order Quantity Model with no shortage**.
    R.Pakhira, U.Ghosh, Susmita Sarkar, Int. Journ Intelligent Systems and Appl. (2019) **11**, 58-68

20. **Study of Memory Effect in an Inventory Model with Quadratic Type Demand Rate and Salvage Value**
    R.Pakhira, U.Ghosh, Susmita Sarkar. Applied Mathematical Sciences, Vol. 13, 2019, no. 5, 209 – 223

21. **Study of Memory Effect In an Inventory Model with Linear Demand and Shortage**
    R.Pakhira, U.Ghosh, Susmita Sarkar.; International Journal of Mathematical Sciences and Computing(IJMSC), ISSN: 2310-9025(Print), ISSN:2310-9033 (Online).DOI:10.5815/ijmsc.2019.02.05.

22. **Application of memory effect in an inventory model with price dependent demand rate during shortage**
    R.Pakhira, U.Ghosh, Susmita Sarkar.; I.J. Education and Management Engineering, 2019, DOI: 10.5815

23. **Study of Memory Effect in an Inventory Model with Linear Demand and Salvage Value**
    R.Pakhira, U.Ghosh, Susmita Sarkar; International Journal of Applied Engineering Research ISSN 0973-4562 Volume 13(20) (2018) pp. 14741-14751.

24. **Application of Memory effects on an inventory model with constant demand rate and deteriorating items,** R.Pakhira, U.Ghosh, S.Sarkar , IEEE, International Conference on New Trends in Engineering and Technology, 2018 (Accepted).

25. **Nonlinear dust acoustic wave propagation in a Lorentzian dusty plasma in presence of negative ions** Raicharan Denra, Samit Paul, Uttam Ghosh, Susmita Sarkar, Journal of Plasma Physics, Vol 84, No. 5, 905840507 (2018)

26. **Global Stability Analysis of Logistically Grown SIR Model with Loss of Immunity, inhibitory effect, crowding effect and it's protection measure**
U. Ghosh, Susmita Sarkar, Computational Methods in Science and Technology. Vol 24 No.2 (2018). ISSN No-1505-0602.

27. **Solution of space time fractional generalized KdV equation, KdV burger equation and Bona-Mahoney-Burgers equation with dual power-law nonlinearity using complex fractional transformation.**
U. Ghosh, S. Raut, Susmita Sarkar, S. Das, Journal of Mathematical and Computational Science, Vol 8, No 1, 114-129 (2018).

28. **Formulation and solution of three dimensional space-time fractional KdV-Zakahrov-Kuznetsov and modified KdV- Zakahrov-Kuznetsov.**
U. Ghosh, Md. Ramjan Ali, Susmita Sarkar, S. Das. 2018. International Journal of Applied Mathematics and Statistics. 57(5), 22-39 (2018); ISSN 0973-1377 (Print), ISSN 0973-7545 (Online).

29. **Study of Memory Effects in an Inventory Model Using Fractional Calculus.**
R. Pakhira, U. Ghosh, Susmita Sarkar, Applied Mathematical Sciences. Vol. 12, No. 17, 797 – 824 (2018).

30. **Application of memory effects on an inventory model with linear demand rate and no shortage**
R. Pakhira, U. Ghosh and Susmita Sarkar , International Journal of Research in Advent Technology, Vol.6, No.8, August 2018.

31. **D'Alembert's solution of fractional wave equations using the complex fractional transformation.**
U. Ghosh, Md. Ramjan Ali, Susmita Sarkar, S. Das. 2018 Nonlinear Sci. Lett. A (Accepted July 3, 2018)

32. **Fractional Klein–Gordon equation composed of Jumarie fractional derivative and its interpretation by a smoothness parameter.**
Uttam Ghosh, Joydip Banerjee, Susmita Sarkarand Shantanu Das, Pramana – J. Phys. Vol. 90, No.6 (2018):

33. **Onset of turbulence induced by electron nonthermality in a complex plasma in presence of positively charged dust grains.**
Susmita Sarkar and SubrataBhakta; AIP Advances 8, 035210(2018).

34. **Time independent fractional Schrodinger equation for generalized Mie-type potential in higher dimension framed with Jumarie type fractional derivative;**
Tapas Das, UttamGhosh, Susmita Sarkarand Shantanu Das, Journal of Mathematical Physics 59, 022111(2018);

35. **Study of the characteristics of dust acoustic solitary waves and dust acoustic shock waves in electron free dusty space plasma,**
R. Denra, S. Paul and Susmita Sarkar, Journal of Modern Physics, Plasma Physics special issue, Vol.9, No.5 (2018), DOI: 10.4236/jmp.2018.95058

36. **Ion nonthermality induced nonlinear dust acoustic wave propagation in a complex plasma in presence of weak secondary electron emission from dust grains.**
Susmita Sarkar and Subrata Bhakta, Journal of Modern Physics, Plasma Physics special issue, Vol.9, No.5(2018), DOI:10.4236/jmp.2018.95059

37. **Study of the characteristics of dust acoustic solitary waves and dust acoustic shock waves in electron free dusty space plasma,**
R. Denra, S.Paul and Susmita Sarkar, Journal of Modern Physics, Plasma Physics special issue, Vol.9, No.5 (2018), DOI: 10.4236/jmp.2018.95058

38. **Ion nonthermality induced nonlinear dust acoustic wave propagation in a complex plasma in presence of weak secondary electron emission from dust grains.**
Susmita Sarkar and Subrata Bhakta, Journal of Modern Physics, Plasma Physics special issue, Vol.9, No.5(2018), DOI: 10.4236/jmp.2018.95059

39. **A Mathematical Approach to Characterize Left Ventricular Hypertrophy from ECG Diagrams.**
Sengupta, U.Ghosh, Susmita Sarkar, S Das. Open Journal of Cardiology & Heart Diseases.Vol.1;IssueNo.2;Year2018.

40. **A Study of Fractional Schrödinger Equation-composed via Jumarie fractional derivative** U.Banerjee, U.Ghosh, Susmita Sarkar and S.Das. PramanaJournalofPhysics,88,(2017).

41. **Fractional Klein-Gordon equation composed via Jumarie fractional derivative and its interpretation by a smoothness parameter**.
Ghosh, J. Banerjee, Susmita Sarkar, S Das (accepted for publication in Pramana Journal of Physics, 2017).

42. **Effect of secondary electron emission on nonlinear dust acoustic wave propagation in a complex plasma with positive equilibrium dust charge.**
Subrata Bhakta and Susmita Sarkar, Physics of Plasmas 24, 073706 (2017).

43. **Effect of ion nonthermality on nonlinear dust acoustic wave propagation in a complex plasma in presence of secondary electron emission.**
SubrataBhakta and Susmita Sarkar, AIP Advances 7, 075113 (2017).

44. **Effect of secondary electron emission on nonlinear dust acoustic wave propagation in a complex plasma with negative equilibrium dust charge.**
Subrata Bhakta, Uttam Ghosh, and Susmita Sarkar, Physics of Plasmas 24, 023704 (2017).

45. **Characteristics of nonlinear dust acoustic waves in a Lorentzian dusty plasma with effect of adiabatic and nonadiabatic grain charge fluctuation.**
RaicharanDenra, Samit Paul, and Susmita Sarkar, AIP Advances 6, 125045 (2016).

46. **Complex dynamics of an eco-epidemiological model with competition coefficients and weak Allee in the Predator**
Md. Saifuddin, SantanuBiswas, Sudip Samanta, Susmita Sarkarand Joydev Chattopadhyay, Chaos, Solitons and Fractals,91, 270-285 (2016)

47. **Analytical Solution of Non-Linear Partial Differential Equations and Corresponding Fractional Differential Equation by tanh and Fractional sub-equation Method.**
Uttam Ghosh, Susmita Sarkar, Shantanu Das, International Journal of Mathematical Computations, 54(3). 11-31. 2016.

48. **A Study of Fractional Schrödinger Equation-composed via Jumarie Fractional Derivative.**

U.Banerjee, U. Ghosh, Susmita Sarkarand S. Das. (accepted for publication in Pramana - journal of physics, 2016)

49. **Analytical Solutions of Classical and Fractional KP-Burger Equation and Coupled KdV Equation.**
U. Ghosh, Susmita Sarkar, S. Das., Computational Methods in Science and Technology, 22(3). 143-152 (2016).

50. **Effect of Electron and/or Ion Nonthermality on Dust Acoustic Wave Propagation in a Complex Plasma in Presence of Positively Charged Dust Grains Generated by Secondary Electron Emission Process.**
Susmita Sarkarand SubrataBhakta, Journal of Modern Physics, 7, 74-86(2016).

51. **Bump-on-tail Instability in SpacePlasmas.**
SusmitaSarkar, Samit Paul and RaicharanDenra, Physics of Plasmas 22, 102109 (2015)

52. **Effect of Emergent Carrying Capacity in an eco-epidemiological system.**
Md.Saifuddin, Sourav Kumar Sasmal, SantanuBiswas, SusmitaSarkar, Marwan Alquran, and Joydev Chattopadhyay, Mathematical Methods in the Applied Sciences(2015).

53. **Allee Effect on a Ratio-Dependent Prey-Predator System with Desease inPrey.**
Sukhamoy Das and Susmita Sarkar, Appl. Math. Inf. Sci. Lett. 3, No. 3, 1-7 (2015) 1

54. **Characterization of Nondifferentiable Points of a Function By Fractional Derivative of JumarieType.**
Uttam Ghosh, SrijanSengupta, Susmita Sarkarand Shantanu Das, European Journal of Academic Essays 2(2) 70-86(2015)

55. **Analytic Solution of Linear Fractional DifferentialEquation with Jumarie Derivative in term of Mittag-Lefer Function**
Uttam Ghosh, Srijan Sengupta, Susmita Sarkarand Shantanu Das, American Journal of Mathematical Analysis 3(2), 2015

56. **Analytical Solution of Non-Linear Partial Differential Equations and Corresponding Fractional Differential Equation by tanh and Fractional sub-equation Method**
Uttam Ghosh, SrijanSengupta, Susmita Sarkarand Shantanu Das, International Journal of Mathematical Computations, 2015

57. **Modelling of Infectious Disease in Presence of Vaccination and Delay.**
Uttam Ghosh, Susmita Sarkar and Dilip Kumar Khan, International Journal of Epidemiology & Infection, Aceepted for publication (2014).

58. **Role of positively charged dust grains on dust acoustic wave propagation in presence of nonthermal ions.** SusmitaSarkar and Saumyen Maity, Physics of Plasmas Vol 20, 084501(2013).

59. **Effect of secondary electron emission of Jean's instability in a complex plasma in the presence of nonthermal ions**.
Susmita Sarkar, Soumyen Maity and SoumyaJyoti Banerjee.Physica Scripta Vol84,045501(2011).

60. **Jeans Instability in a drifting dusty plasma in presence of secondary electron emission**
SusmitaSarkar, SaumyenMaity, B.Roy, M.Khan; PhysicaScripta 81(2010)025504(5pp)

61. **Effect of compressibility on the Rayleigh-Taylor and Ritchmyer-Meshkov Instability induced nonlinear structure at two fluid interface.**
M.R.Gupta, S. Roy, M.Khan, H.C.Pant, SusmitaSarkarand M.K.Srivastava.Physics of Plasmas 16, 032303 (2009).

62. **Effect of Ritchmyer-Meshkov instability of deviation from sinusoidality of the Corrugated interface between two fluids.**
M.R.Gupta, S. Roy, Susmita Sarkar, M.Khan, H.C.Pant and M.K.Srivastava.Laser and Particle Beams 25, 503-510 (2007).

63. **Effect of secondary electron emission on the Jeans instability in a dusty plasma.**
Susmita Sarkar, B.Roy, S. Maity, M.Khan and M.R.Gupta.Physics of Plasmas 14, 042106-1-7 (2007).

64. **Effect of secondary electron emission and other sources on the propagation of dust ion acoustic waves in a complex plasma with positively charged dust grains.**
B.Roy, Susmita Sarkar, M.Khan and M.R.Gupta. Phys Letters A 364, 291-296 (2007)

65. **The role of negative ions on the Jeans instability in a complex plasma in presence of nonthermal positive ions.**
B.Roy, Susmita Sarkar, M.Khan and M.R.Gupta.Physics of Plasmas 13, 102904/1-6 (2006).

66. **Jeans instability in a complex plasma in presence of negative ions.**
Susmita Sarkar, B.Roy, M.Khan and M.R.Gupta.Physica Scripta 73, 506-510 (2006).

67. **Propagation of dust acoustic waves in a complex plasma with negative ions.**
B.Roy, Susmita Sarkar, M.Khan and M.R.Gupta.Physica Scripta 71, 1-4 (2005).

68. **Combined Effect of secondary electron emission, plasma ion and electron number density variation due to dust charging and ionization recombination process on dust ion acoustic wave propagation.**
M.R.Gupta, Susmita Sarkar, B.Roy, A. Karmakar and M.Khan.Physica Scripta 71, 298-302 (2005).

69. **Effect of secondary electron emission on the propagation of dust acoustic waves in dusty plasma**.
M.R.Gupta, SusmitaSarkar, B.Roy, A. Karmakar and M.KhanPhys of Plasmas 11, 1850-1859 (2004).

70. **Dust acoustic shock waves at high dust density.**
S.Ghosh, Susmita Sarkar, M.Khan, K.Avinash and M.R.Gupta. Phys of Plasmas 10, 977-983 (2003).

71. **Collisional damping of nonlinear dust ion acoustic wave due to dust charge fluctuation**.
S.Ghosh, T. K. Chowdhury, Susmita Sarkar, M.Khan and M.R.Gupta. Phys Rev E 65, 037401-4 (2002)

72. **Nonlinear acoustic mode at high dust density.**
S.Ghosh, Susmita Sarkar, M.Khan, M.R.Gupta and K.Avinash. Phys Lett A 298, 49-55 (2002).

73. **Ion acoustic shock waves in a collisional dusty plasma.**
S.Ghosh, Susmita Sarkar, M.Khan, M.R.Gupta. Phys of Plasmas 9, 378-381 (2002).

74. **Effect of nonadiabatic dust charge variation on nonlinear dust acoustic waves in presence of non isothermal ions in a dusty plasma.**
S.Ghosh, Susmita Sarkar, M.Khan, M.R.Gupta Phys of Plasmas 9, 1150-57 (2002).

75. **Evolution of induced axial magnetization in a two component magnetized plasma.**
SusmitaSarkar, P.Mukhopadhyay, M.Khan, J.Ortner, M.Steinberg and W.Ebeling. Phys Rev E 64, 046401-7 (2001).

76. **Effect of grain charge fluctuation on dispersion relation of dust acoustic waves in unmagnetized dusty plasma.**
Susmita Sarkar, M.Khan, S. Ghosh, M.R. Gupta. Rev. Bull. Cal. Math. Soc 8 (1&2)1-10(2001)

77. **A theory of Landau damping of ion acoustic waves in a dope plasma.**
S. Mondal, Susmita Sarkar, A.M. Basu, M. Khan, R. Bhattacharya, B. Chakraborty. Phys of Plasmas 8, 713-718 (2001).

78. **Small amplitude nonlinear dust ion acoustic waves in a magnetized dusty plasma with charge fluctuation.** S.Ghosh, Susmita Sarkar, M.Khan, M.R.Gupta Physica Scripta 63, 395-403 (2001)

79. **Small amplitude nonlinear dust acoustic waves in a magnetized dusty plasma with charge fluctuation.**
S.Ghosh, SusmitaSarkar, M.Khan, M.R.Gupta IEEE, TPS, 29, 409-16 (2001).

80. **Effect of nonadiabaticity of dust charge variation on dust acoustic waves: Generation of dust acoustic shock waves.**
M.R. Gupta, Susmita Sarkar, S. Ghosh, M. Debnath and M.Khan Phys Rev E 63, 046406, 1-9(2001)

81. **Small amplitude nonlinear dust acoustic wave propagation in Saturn E and F rings.**
S.Ghosh, T. K. Chowdhury, Susmita Sarkar, M.Khan and M.R.Gupta. Astrophys and Space Science,278, 463-469 (2001).

82. **Dust ion acoustic shock waves in a collisionless dusty plasma.**
S.Ghosh, SusmitaSarkar, M.Khan, M.R.Gupta Phys Lett A 274 (3&4), 162-169(2000).

83. **Nonlinear properties of small amplitude dust ion acoustic solitary wave**.
S.Ghosh, Susmita Sarkar, M.Khan, M.R.Gupta Phys Plasmas 7, 3594-3598 (2000).

84. **Effect of finite ion inertia and dust drift on small amplitude dust ion acoustic soliton.**
S.Ghosh, Susmita Sarkar, M.Khan, M.R.Gupta. Planetary and Space Science 48, 609-614 (2000).

85. **Low frequency wave propagation in a cold magnetized dusty plasma.**
Susmita Sarkar, S. Ghosh and M. Khan. Planetary and Space Science 47, 273-280 (1999).

86. **Modification of Stimulated Brillioun Scattering due to magnetic anisotropy in laser plasma interaction**.
M.Khan, Susmita Sarkar, T. Desai and H.C.Pant. Laser and Particle Beams 16,491-501 (1998).

87. **Plasma Confinement and other effects of Magnetic Moment from Standing Waves in a Vlasov Plasma**.
Susmita Sarkar, D.Dutta, B. ChakrabortyandM.Khan.IlNuovoCemento,18D,75-88(1996).

88. **Magnetization and other Characteristics of Exact Relativistic Dispersion of Circularly Polarized radiation in a Magnetized Plasma.**
Susmita Sarkar, B. Chakraborty, M. Khan and D. Dutta.Phys Plasmas 3(2), 468-472 (1996).

89. **Exponentially Temporally Growing Magnetic Moment field of Stimulated Brillioun Scattering in Plasma.**
Susmita Sarkar, B. Chakraborty, M. Khan. Phys Rev E 50, 1458-1464(1994).

90. **Theory of Resonant and Stimulated Excitation of Magnetic Moment field in Wave Plasma Interaction**.
Chakraborty, SusmitaSarkar, C. Das, B.Bera and M. Khan. Phys Rev E 47, 2736-2747 (1993).

91. **Radiative Cooling Instabilities in Low Dense Plasma Corona of Laser Irradiated SolidTargets.**
J. Dhareswar, P.A. Naik, Susmita Sarkar, M. Khan and B. Chakraborty.Phys Fluids B 4,1635-1642 (1992).

92. **Some aspects of self generated magnetic field**.
M.Khan, C. Das, Susmita Sarkar, B. Bera, B. Chakraborty, H.C.Pant. Ind. J. Phys. 66B, 693-709(1992)

93. **Lateral and Axial Magnetization due to inverse Faraday effect of interaction of waves in plasmas.**
SusmitaSarkar, B.Bera, M.Khan, B.Chakraborty. Australian J.Physics 44,59-66(1991)

94. **Nonlinearly Evolved Magnetization in Plasma.**
SusmitaSarkar, B. Chakraborty, M .Khan. Ind. Jour. Of Theo Phys. 39, 33-40(1991)

95. **Induced Magnetization of AlfvenWaves.**
B.Chakraborty, M.Khan, SusmitaSarkar, V.Krishan and B.Bhattacharyya, Annals of Physics 201,1-12(1990).

Other Publications:

A. **SusmitaSarkar**, "Activities of the Applied Mathematics Department: A Contemporary Phase"**,** published in " Glimpsing Through One Hundred Years of Applied Mathematics Department, University of Calcutta", Calcutta University Press, 2014, page43-46

B. Arabinda Roy and **SusmitaSarkar**, "Centre of Advanced Study and DSA SpecialAssistance Program**"**, published in "Glimpsing Through One Hundred Years of Applied Mathematics Department, University of Calcutta", Calcutta University Press, 2014, page21-24.

Book Review :

1. **"Functional Fractional calculus", Second Edition. Publisher: Springer-Verlag, Berlin, Heidelberg.**

Susmita Sarkar, International Journal of Mathematics and Computation, 18 (1), 2013.

2. ***Books/ book chapters: Applied Mathematics (Springer Proceedings in Mathematics and Statistics)****, Kolkata, India, February 2014.* ***Editors: Susmita Sarkar****, Uma Basu, Soumen De.*

Membership of Learned Societies:

i. Life member of Calcutta MathematicalSociety
ii. Life member of Plasma Science Society of India
iii. Life member of AsiaticSociety
iv. Life member of Indian Society for Nonlinear Analysis.
v. Life member of Indian Association for Cultivation of Science
vi. Life member of Indian Society of Theoretical and Applied Mechanics.
vii. Life member of Von-Karman Society for Advanced Study and Research.
viii. Life member of Presidency College AlumniAssociation.
ix. Life member of Indian Science CongressAssociation.

Invited lectures delivered :

i. Delivered invited lecture in the 8th National Conference on "Wave Mechanics and Vibrations" (WMVC-2018) during 26-28 November, 2018 at NIT, Rourkela..
ii. Delivered invited lecture on 8th March, 2018 in the occasion of "International Women's Day" jointly organized by Physics Department and Mathematics Department, SiliguriCollege.

iii. Delivered invited lecture in the 5 Day National Workshop on "Recent Advances in Modelling & Computational Techniques in Applied Mathematics" (RAMCTAM), during November 20-24, 2017 at IIEST, Shibpur.

iv. Delivered lecture in the Ph.D course work of West Bengal State University on 14th November 2017.

v. Visited Bhabha Atomic Research Centre, Mumbai during March, 2017 for BRNS project related discussion with Prof. Shantanu Das, Scientist-H+, Reactor Control Division of BARC, Mumbai.

vi. Delivered lecture on "Solution of Partial Differential Equations: Method of Characteristics" in West Bengal State University during 27th September,2016.

vii. Delivered lecture on "Fractional Derivatives: Properties and Applications" in the National Seminar on" Applications of Generalized Calculus in Physics and Applied Mathematics" held in Jadavpur University during 26-27th April, 2016.

viii. Delivered invited lecture in the Summer Program of Indian Society of Nonlinear Analysis held at the Condensed Matter Research Centre, Jadavpur University on 6th May, 2015.

ix. Delivered invited lecture in the 7th International Conference on" Frontiers of Plasma Physics and Plasma Technology", held in Kochi during April 13-17,2015.

x. Delivered special lecture in the National Seminar " Mathematical Modelling with Fluids and Plasmas" in the Department of Mathematics, Dibrugarh University during March 18-19,2015.

xi. Delivered Plenary lecture in the International Conference "Revisiting Ancient Mathematics and Mathematical Sciences" held on February 18-20, 2015 at University of Burdwan.

xii. Delivered lecture in the weekly seminar of the Center for Condensed Matter Physics, Jadavpur University on November 28, 2014.

xiii. Delivered two lectures in the Refresher Course on Mathematical Modelling held in Burdwan University on September20,2014

xiv. Delivered lecture in the Refresher Course in Mathematics with thrust area Mechanics in the Department of Applied Mathematics, University of Calcutta during July,2014.

xv. Delivered invited lecture in the 3rd International Conference on Frontiers of Mathematics & Applications at Department of Mathematics, University of Burdwan during January 29-31,2014.

xvi. Delivered three lectures in the1st Refresher course on Mathematical Modelling and its Application in Science held at the Academic Staff College, Golapbag, Burdwan University during December 10-30,2013.

xvii. Acted As Chair person in the International Conference on Facets of Uncertainties and Applications Conference 5th to 7th December 2013 Kolkata, West Bengal, India.

xviii. Delivered lecture in the Interdisciplinary short term course on Mathematical, Chemical and Physical Sciences organized by the Department of Applied mathematics University of Calcutta during February 22-28, 2013.

xix. Visited Department of Infomatics and Telecommunication, University of Delhi South Campus and interacted with Prof. M.K. Das there during January 16-18,2013.

xx. Delivered lecture in the 6th International Conference on "Mathematical Sciences for Advancement of Science and Technology" (MSAST2012) organized by the Institute for Mathematics, Bioinformatics, Information Technology and Computer Science (IMBIC) during Dec 21-23 ,2012 in Kolkata, India.

xxi. Delivered lecture in the Refresher Course in Mathematics organized in the Department of Applied Mathematics, University of Calcutta during August, 2012.

xxii. Visited Department of Infomatics and Telecommunication, University of Delhi South Campus and interacted with Prof. M.K. Das there during January 16-18,2012.

xxiii. Participated and presented paper in the 56th Congress of Indian Society of Theoretical and Applied Mechanics (ISTAM)"AnInternationalMeet"duringDecember19-21,2011atSardarVallavbhaiNationalInstituteofTechnology, Surat.

xxiv. Visited and delivered lecture in the IMMT, RRL, Bhubaneswar on October 7,2011.

xxv. Attended and presented research paper in the "Fifth International Conference on Frontiers of Plasma Physics and Technology " held at Singapore during April 18-22,2011.

xxvi. Attended and presented research paper in the "National Conference on Mathematical Modelling and Computer Simulation "Benaras Hindu University, Benaras during March 25-27,2011.

xxvii. Attended and presented research paper in the "First National Conference on Mathematical Sciences" held at Sikkim-Manipal Institute of Technology, Majitar, East Sikkim during March 11-13,2011.

Awards:

i. **Awarded National Scholarship from Madhyamik to M.Sc**

ii. **Awarded Jnanendra Bhusan Memorial book prize for securing highest marks in Mathematics Honours from Presidency College**

iii. **NET Qualified.**

iv. **Awarded INSA Visiting Fellowship in 1997-1998.**

v. **Associate, Third World Academy of Sciences(TWAS)(2000-2003)**

vi. **Regular Associate, International Centre for Theoretical Physics (ICTP),Trieste, Italy.2003-2008.**

vii. **Received UGC major research project as a principal investigator under the University with Potential for Excellence Scheme for 2007-2012.**

Other notable activities :

a) Acted as convener of 16 National Seminars/workshops and one international seminar in the Applied Mathematics Department and invited speakers from reputed Institutes and Universities in India and abroad like University of California (Santacruz), University College of Dublin (Ireland), Hokkaido University (Japan), BARC (Mumbai), IISc (Bangalore), TIFR (Bangalore), IIT (Kanpur, Kharagpur, Guwahati), SN Bose Centre for

Basic Science(Kolkata), Indian Association for Cultivation of Science(Kolkata), National Council for Medium Range Weather Forecasting (New Delhi), Bose Institute (Kolkata), Saha Institute of Nulear Physics (Kolkata), IUCAA, Pune, IISER(Kolkata), IISER (Pune). Also invited speakers from Department of Economics, Department of Physics, Department of Chemistry and Department of Pure Mathematics of our University.

Following Seminars and workshops organized in the Department as Convener or joint convener. (iii--viii organized in my headship period September 1, 2012 – August 31, 2014)

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i. Organized National Seminar" Recent Advances in Applied Mathematics" as convener during December 26-28,2016

ii. Organized Science Academy's Three Days Workshop "Hyperbolic Partial Differential Equations and
Conservation Laws" during August 10-12, 2016 (Convener; Prof. Phoolan Prasad, IISc, Bangalore; Coordinator: Prof. Susmita Sarkar, CU)

iii. Organized International Conference "Emerging Trends in Applied Mathematics: Dedicated to the Memory of Sir Asutosh Mookerjee and Contributions of S.N. Bose, M.N. Saha and N.R.Sen" during February 12-14, 2014 in Collaboration with Saha Institute of Nuclear Physics, Kolkata and Indian Association for the Cultivation of Science, Kolkata.(other joint convenor: Prof.Uma Basu, Applied Mathematics Department , University of Calcutta).

iv. Organized Advanced Level Workshop "Nonlinear Differential Equations: Dynamics of Complex Systems" during September 23-28, 2013 under NPDE-TCA Program of DST and DST-PURSE Program of Calcutta University.(Prof. Amiya Kumar Pani, IIT,Mumbai, Coordinator from the part ofDST)

v. Organized a one-day Seminar on "Recent Trends in Geophysical Research" in memory of Late Prof. Arabinda Mukherjee on 5th September, 2013 (Teachers Day).

vi. Organized National Seminar on "Nonlinearity, Complex Dynamics and Chaos in Economics and Finance" in Collaboration with Department of Economics, University of Calcutta during March 13-14, 2013. (other joint convenor: Prof. Ishita Mukherjee, Department of Economics, University of Calcutta).

vii. Organized an Interdisciplinary Short Term Course on "Mathematical, Chemical and Physical Sciences" in collaboration with Physics and Chemistry Departments and UGC-Academic Staff College, University of Calcutta during February 22-28, 2013. . (other joint convenor: Prof. Debnarayan Jana, Pure Physics Department , University of Calcutta).

viii. National seminar on "Mathematics and Mathematical Sciences" organized jointly by Department of Applied Mathematics and Department of Pure Mathematics, University of Calcutta to celebrate the National Mathematics Year 2012 in the occasion of 125th birth anniversary of Srinivasa Ramanujan: Joint Convenor as Head of the Applied Mathematics Department (other joint convenor: Prof. Manjusha Mazumdar, Head of Pure Mathematics Department).

ix. "Recent Advances in Techniques of Applied Mathematics: Computational and Analytical" during March 14-16, 2012. (Convenor)

x. "Differential Equations: Modelling, Analysis and Computation", during March2-3,2011. (Convenor)

xi. "Interdisciplinary Problems in Nonlinear Dynamics: Computational and other Techniques", during February 24-25, 2010.(Convenor)

xii. "Advances in Applied Mathematics: Recent Trends and Current Perspectives" during March21-23, 2007.(Convenor)

xiii. "Wave Motions and instability in Plasma", during March 30, 2006.(Convenor)

xiv. "Continuum Mechanics in the Perspective of Modern Trends" during March 21-23, 2005. (Jt. Convenor)

xv. "Recent Advances in Fluid Mechanics", during March 24-25, 2003. (Jt.Convenor)

xvi. "22nd CASAM- CU" during March 14-15, 2000. (Jt.Convenor) Acted as a Coordinator of four Orientation Programmes (28 days programme) and two Refresher Course (21 days programme) for the College and University teachers organized by the Academic Staff College of Calcutta University.

Interdisciplinary Activities:

1. Organized National Seminars which were mainly focused on interdisciplinary aspects of Applied Mathematics. Invited speakers from Mathematics, Physics, Economics, Chemistry and Engineering disciplines. Main objective of these seminars were to give an exposure to the students of Applied Mathematics to engage them in interdisciplinary research after post graduation. From such seminars students can get exposure to a greater scientific world . Such interdisciplinary seminars also benefit the researchers who can interact with the experts of different fields on a common platform.
2. Co-ordinated four Orientation Programmes in which speakers from diversive fields were invited.

A. Eminent Scientists Visited and delivered lectures in the Department during my Headship period (September 1, 2012 – August 31, 2014):

1. Prof. Jayant Vishnu Narlikar, Emeritus Professor, IUCAA,Pune.
2. Prof. Ralph Abraham, University of California , SantaCruz.
3. Prof. Peter Leach, University of Kawazulu,Durban.
4. Prof. Jun-Ichi-Inoue, Hokkaido University,Japan.
5. Prof. Siddhartha Sen, University College of Dublin,Ireland
6. Prof. Jayanta Kumar Bhattacharjee, Director, HRI,Allahabad.
7. Prof. M.Lakshmanan, Bharatidasan University,Thrichur.
8. Prof. Deepak Dhar, TIFR,Mumbai.
9. Prof. GovindanRangarajan, IISc,Bangalore.
10. Prof.ChachalUberoi, IISc,Bangalore.
11. Prof. Sunil Chakraborty,National Aeronautical Laboratory,Bangalore
12. Prof. Amita das, IPR,Ahmedabad
13. Prof. Soumitro Banerjee, IISER,Kolkata
14. Prof. SitabhraSinha, IIMSC,Chennai
15. Prof. Siddhartha PratimChakraborty, IIT,Guwahati
16. Prof. Bikash K. Chakraborty, SINP, Kollkata
17. Prof. Amitava Ray Chaudhuri, CU,Kolkata
18. Prof. Indrani Bose, Bose Institute,Kolkata
19. Prof. PranayGoyel, IISER,Pune
20. Prof. PradipNiyogi, IIT,Kharagpur
21. Prof. AmiyaGopal Mukherjee, ISI,Kolkata
22. Prof. RanaBarua, ISI,Kolkata
23. Prof. B.N.Mandal, ISI,Kolkata
24. Prof. ParthaGuha, SNBCBSc,Kolkata

B. Publication of the Department during my Headship period (September 1, 2012 – August 31, 2014) :

I. **Invited lectures and contributed papers of the International Conference" Emerging Trends in Applied Mathematics, Dedicated to the memory of Sir Asutosh Mookerjee and contributions of S.N. Bose , M.N. Saha and N.R. Sen , held during February 12-14, 2014" has been published from Springer in the book Applied Mathematics (Springer Proceedings in Mathematics and Statistics),Kolkata, India, February 2014** Editors**: Susmita Sarkar,** Uma Basu, Soumen De.

II. **"Glimpsing Through One Hundred Years of Applied Mathematics Department, University of Calcutta", has been published from Calcutta University Press,2014.**