

Prabir Kumar Haldar

Curriculum Vitae

Cooch Behar Panchanan Barma University
Department of Physics
Panchanan Nagar
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Cooch Behar, 736101, India
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D.O.B.: 31/03/1973



Education

- 2003 **Ph.D (Physics)**, Jadavpur University, Jadavpur, Kolkata
- 1997 **M.Sc (Physics)**, Jadavpur University, Jadavpur, Kolkata
First Class
- 1995 **B.Sc (Physics)**, Jadavpur University, Jadavpur, Kolkata
First Class

Ph.D Thesis

Title **"Fluctuation in fragmentation and pionisation in ultra relativistic nuclear interactions"**

Supervisors Prof. Dipak Ghosh & Prof. Arghya Deb, Department of Physics, Jadavpur University.

Teaching Experience: 18 Years

Name Of The Institution	Position Held	Working Period
Cooch Behar Panchanan Barma University	Professor	01-02-2018 to till date
Dinhata College	Assistant Professor of Physics	02-03-2005 to 31-01-2018
Siliguri Institute of Technology	Lecturer of Physics	24-08-2004 to 01-03-2005

Awards

- 2009 Recipients of SERC FAST TRACK Scheme for Young Scientists from DST, Govt. of India.
- 2020 Recipient of **Shiksha Ratna** award given by Govt. of West Bengal.

Associate Members

- 2024 **ALICE-STAR India Collaboration**
- 2024 **Inter-University Centre for Astronomy and Astrophysics (IUCAA)**

Administrative Experience:

Positions Held	Period
Dean, Faculty of Post Graduate Studies in Science, Technology and Vocational Studies, Cooch Behar Panchanan Barma University (CBPBU)	From 14-06-2019 to 14-06-2022
Controller of Examinations (Offg.), Cooch Behar Panchanan Barma University	From 29-03-2018 to 28-09-2018 (Six Months)
Head ,Department of Physics, Cooch Behar Panchanan Barma University (CBPBU)	From 08-02-2022 to till date
Served as a Jt. Coordinator in the Dept. of Physics, CBPBU	Since Aug, 2015 to 31-10-2017
Head, Department of Physics, Dinhata College	From 01-09-2014 to 01-07-2017

Research

Specializations

High Energy Physics

Areas of Research Interest

- High-energy Heavy-ion Interactions, Studies on different global and local aspects of multi-particle production, Particle density fluctuation, Complex network analysis, Nuclear multifragmentation etc. by using various theoretical and statistical/analytical methods and Monte Carlo simulations. My research also finds common parameter values for various compact stars, yielding identical equations of state and central density. Starting from the core with a specific density, structural characteristics can be determined by halting when pressure hits zero. This approach differs from traditional TOV solving models. The mass-radius curve of compact stars is computed for various central density values under a given equation of state.

- Receiving techniques of Very Low Frequency (VLF, 3-30 kHz) radio waves, Space Weather/Solar activities, Atmospheric phenomena e.g. Tropical Cyclones, Lightning-thunderstorm, Earthquakes etc. and their impacts on Ionosphere. Observation of naturally generated Extremely Low Frequency (ELF, 1-300 Hz) and Ultra Low Frequency (300-3000 Hz) radio signals.

Ph.D. Thesis Guidance

Awarded: 08

1. Thesis Submitted to the University of North Bengal for Ph.D degree by **Mr. Sanjib Kumar Manna** on 2022 and recommended for Ph.D. degree. (Jointly supervised).
2. Thesis Submitted to the Cooch Behar Panchanan Barma University for Ph.D degree by **Mr. Prosenjit Saha** on 2020 and recommended for Ph.D. degree.
3. Thesis Submitted to the Cooch Behar Panchanan Barma University for Ph.D degree by **Mr. Bakul Das** on 2022 and recommended for Ph.D. degree.
4. Thesis Submitted to the Cooch Behar Panchanan Barma University for Ph.D degree by **Mr. Abubakkar Siddik** on 2022 and recommended for Ph.D. degree.
5. Thesis Submitted to the Cooch Behar Panchanan Barma University for Ph.D degree by **Ms. Nikita Ghosh** on 2023 and recommended for Ph.D. degree.
6. Thesis Submitted to the Cooch Behar Panchanan Barma University for Ph.D degree by **Mr. Niharendu Barman** on 2023 and recommended for Ph.D. degree.
7. Thesis Submitted to the Cooch Behar Panchanan Barma University for Ph.D degree by **Mr. Azharuddin Ahmed** on 2023 and recommended for Ph.D. degree.
8. Thesis Submitted to the Cooch Behar Panchanan Barma University for Ph.D degree by **Ms. Nirpat Subba** on 2023 and recommended for Ph.D. degree.

Submitted: 01

1. Thesis Submitted to the Cooch Behar Panchanan Barma University for Ph.D degree by **Mr. Asadullah Sk** on 2023 (Reg. No.: CBPBU/115/Ph.D/012).

Registered: 07

1. Ms. Shreya Bhattacharjee (Ph.D. Reg. No.: CBPBU/115/Ph.D/016)
2. Ms. Kheyali Barman (Ph.D. Reg. No.: CBPBU/115/Ph.D/017)
3. Mr. Subhadeep Paul (Ph.D. Reg. No.: CBPBU/115/Ph.D/021)
4. Ms. Susmita Das (Registered)
5. Ms. Taniya Kundu (Registered)
6. Mr. Chayan Saha (Registered)
7. Ms. Tumpa Biswas (Registered)

Sponsored Projects:

Details of Sponsored Projects :				
Agency	Project Sanction No	Title	Approved Allocation	Status
University Grants Commission	PSW-139/06-07 (ERO) Dated: 19/02/2007 Duration : two Years	Fluctuation Studies of Pionisation Process for ring like and Jet like events in Ultra-Relativistic Nuclear Interactions	90,000/-	Completed
Department of Science and Technology (Fast Track Scheme For Young scientists)	Do No: SR/FTP/PS-21/2008 Recommended Date 25/09/2008	Investigation of ring like (Super spiky) events in Ultra-relativistic Nuclear Interactions – evidence of QGP formation or Cerenkov Gluon Radiation (A new Concept in High energy Physics)	Total: Rs. 14,69,200/- Manpower: One JRF	Started on 03.04.2009(three years) Completed
Department of Science & Technology and Biotechnology (Government of West Bengal)	917(Sanc.)/STBT-11012(20)/42/2019-ST SEC	Study of lightning induced mesospheric phenomena and its association with severe weather using coordinated radio receivers and optical camera	Total: Rs. 3,80,000/-	Started on 05.03.2021-upto three years

Research Publications:

- , *International Journals*, 93
- , *International conference papers*, 14
- , *National conference papers*, 19
- , *Regional/state level conference papers*, 02
- , *Books with ISBN number*, 02

Google scholar, researchgate and ORCID ID link

Citation: 776

h-index: 16

i10-index: 32

<https://scholar.google.com/citations?user=9sdFHWgAAAAJ&hl=en>

<https://www.researchgate.net/profile/Prabir-Haldar>

ORCIDID:0000-0002-2765-4544

Departmental Profile

<https://cbpbu.ac.in/department-of-physics.php>

Publication Details

International Journals:

Year : 2024

1. Investigation of net-charge fluctuation for the particle yields in PbPb collisions at $\sqrt{s_{NN}}= 5.5$ TeV using AMPT model, S. Paul, T. Biswas, D. Dhar, Z. Ahammed, **P. K. Haldar**, **EPJP** **139**, 1062 (2024).
2. Bipolar-resistive switching characteristics in lead-free inorganic double-halide perovskite-based memory devices, S. Das, **P. K. Haldar**, P. K. Sarkar, **Bulletin of Materials Science** **47(4)**, 225 (2024).
3. Quantum geometric perspective on the origin of quantum-conditioned curvatures, A. N. Tawfik, A. Pasqua, M. Waqas, A. Alshehri, **P. K. Haldar**, **Classical and Quantum Gravity** **41(19)**, 195018 (2024).
4. The study of strongly intensive observables for $\pi^{\pm,0}$ in pp collisions at LHC energy in the framework of PYTHIA model, T. Biswas, D. Dhar, A. Ahmed, **P.K. Haldar**, A.N. Tawfik, **Acta Physica Polonica B** **55**, 8-A3 (2024).
5. Dynamical fluctuations of pions in pp collisions at different LHC energies: an in-depth analysis with factorial correlator, T. Biswas, A. Ahmed, S. Paul, D. Dhar, S. K. Manna, M. Kalam, D.

Ghosh, **P. K. Haldar**, **Indian Journal of Physics** (2024).

6. A comparative study of CuO nanoparticle and CuO/PVA-PVP nanocomposite on the basis of dye removal performance and antibacterial activity in wastewater treatment, N Ghosh, S Sen, G Biswas, LR Singh, D Chakdar, **P K Haldar**, **International Journal of Environmental Analytical Chemistry** **104** (10), 2234-2254 (2024).
7. Analytical model of low-mass strange stars using Tolman space-time in $(2 + 1)$ dimensions, T. Kundu, M. Murshid, **P. K. Haldar**, M. Kalam, **Pramana Journal of Physics**, **98(2)**, 75 (2024).
8. A review on correlations among the multiplicities of charge particles at SPS, RHIC and LHC energies, S. Bhattacharjee, **P. K. Haldar**, **Modern Physics Letters A**, **39(13)**, 2430003 (2024).
9. D-region ionospheric disturbances due to the December 2019 solar eclipse observed using multi-station VLF radio network, K. Barman, B. Das, S. Pal, **P. K. Haldar**, S. K. Midya, S. Pal, S. K. Mondal, **Advances in Space Research** (2024).
10. An approach to complex network analysis on pp collisions at LHC energies, A. Ahmed, T. Biswas, N. Subba, S. Paul, A. N. Tawfik, M. Kalam, D. Ghosh, **P. K. Haldar**, **International Journal of Modern Physics E**, **33(6)**, 2450022 (2024).
11. Resistive Switching Properties in Copper Oxide–Graphene Oxide Nanocomposite–Based Devices for Flexible Electronic Applications, N Ghosh, A Siddik, PK Sarkar, **P K Haldar** **Journal of Electronic Materials** **53** (1), 432-440 (2024).

Year : 2023

12. Wavelet transform-based multi-scale analysis of ring-like and jet-like events in relativistic heavy-ion collisions, **N. Subba, P.K. Haldar**, **The European Physical Journal Plus** **138** (12), 1128, (2023).
13. Study of forward–backward correlation and multiplicity fluctuations of pions produced in p–p collisions at recent LHC energies, S. Paul, S. Bhattacharjee, A. Ahmed, T. Biswas, M. Kalam, **P.K. Haldar**, **Journal of Physics G: Nuclear and Particle Physics** **51** (1), 015002, (2023).
14. Microlensing of halo objects in the exterior part of the Galaxy, T. R. Hossain, **P.K. Haldar**, M. Kalam, **arXiv preprint arXiv:2311.10184**, (2023). (Communicated)
15. R/S analysis on multiparticle production process in nucleus–nucleus collisions at different SPS energies, N. Subba, A. Ahmed, A.N. Tawfik, **P.K. Haldar**, **Bulgarian Journal of Physics** **50**, 398-411 (2023).
16. A comprehensive review on poly (vinylidene fluoride) from a theoretical and multimodal applications perspective A. Sk, P. Adhikary, W. Rahman, **P. K. Haldar**, **Polymer Engineering & Science** **63** (10), 3209-3222 (2024).

17. Self-affine pionization in pp collisions at LHC energy, S. Bhattacharjee, S. Paul, A. Ahmed, A.N. Tawfik, **P.K. Haldar**, *International Journal of Modern Physics E* **32 (5)**, 2350023 (2023).
18. Energy dependence of the freeze-out parameters extracted from Au+ Au and Pb+ Pb collisions using THERMUS, M. Ghimiray, N. Subba, A. Ahmed, A.N. Tawfik, **P.K. Haldar**, *Indian Journal of Physics* **97 (5)**, 1551-1564 (2023).
19. Adsorption and Desorption Study of Reusable Magnetic Iron Oxide Nanoparticles Modified with Justicia adhatoda Leaf Extract for the Removal of Textile Dye and Antibiotic, N Ghosh, S Sen, G Biswas, A Saxena, **P. K. Haldar**, *Water, Air, & Soil Pollution*, **234 (3)**, 202 (2023).
20. Organic-inorganic FAPbBr₃ perovskite based flexible optoelectronic memory device for light-induced multi level resistive switching application, A Siddik, **P K Haldar**, U Das, A Roy, PK Sarkar, *Materials Chemistry and Physics* **297**, 127292 (2023).

Year : 2022

21. A Brief Review of ELF/VLF Reception Techniques & Experiments, B. Das, **P.K. Haldar**, *Advances in Modern and Applied Sciences*, **146** (2022).
22. Ionospheric Effects of Cyclonic Storms: A Brief Review, K. Barman, B. Das, S. Pal, **P.K. Haldar**, *Advances in Modern and Applied Sciences*, **164**, (2022).
23. Nucleation of electro-active β and γ - phases in P (V DF- HF P) for manufacturing energy harvesting device and self powered weight measuring device, A Sk, P Adhikary, **P K Haldar**, *Polymer Engineering & Science* **62 (11)**, 3858-3867 (2022).
24. Thermoelectric properties of Rashba compounds KSnX (X= Sb, Bi), N Barman, M Matin, A Barman, **PK Haldar**, *Journal of Applied Physics* **132 (13)**, (2022).
25. Search for fractality and phase transition in p-p collisions at LHC energy - S. Bhattacharjee, S. Paul, A. Ahmed, N. Subba, A. N. Tawfik, **P. K. Haldar**, *International Journal of Modern Physics E* **31(8)** 2250079 (2022).
26. Impact of Three Solar Eclipses of 2019–2020 on the D-Region Ionosphere Observed From a Subtropical Low-Latitude VLF Radio Station, B Das, K Barman, S Pal, **P K Haldar**, *Journal of Geophysical Research: Space Physics* **127 (8)**, e2022JA030353 (2022).
27. Review on some metal oxide nanoparticles as effective adsorbent in wastewater treatment, N Ghosh, S Das, G Biswas, **PK Haldar**, *Water Science and Technology* **85 (12)**, 3370-3395 (2022).
28. Recent Advances in Halide Perovskite-Based Nonvolatile Resistive Random-Access Memory - A. Siddik, P. K. Sarkar, **P. K. Haldar**, *Journal of Electronic Materials* **51** 434–446 (2022)

Year : 2021

29. Evidence of forward-backward correlation of pions in ultra-relativistic ring- and jet-like events in $^{16}\text{O} - \text{Ag}/\text{Br}$ interactions at $E_{\text{lab}}=60$ A GeV - A. Ahmed, N. Subba, S. Bhattacharjee, A. N. Tawfik, **P. K. Haldar**, *Eur. Phys. J. A* **57** 332 (2021).
30. Response of the Sub-Ionospheric VLF Signals to the Super Cyclonic Storm Amphan: First Observation from Indian Subcontinent, B Das, A Sen, S Pal, **PK Haldar**, *Journal of Atmospheric and Solar-Terrestrial Physics* **220**, 105668 (2021).
31. Degree of multifractality and correlations in framework of multi-dimensional complex network analysis for $^{16}\text{O}-\text{Ag}/\text{Br}$ interactions at 60 A GeV - N. Subba, A. Ahmed, S. Bhattacharjee, **P. K. Haldar**, A. N. Tawfik, *Eur. Phys. J. Plus* **136** 813 (2021).
32. First-principles study of anisotropic thermoelectric properties of hexagonal KBaBi - N. Barman, A. Barman, **P. K. Haldar**, *Journal of Solid State Chemistry* **296** 121961 (2021).
33. Pronounced fluctuations of pions in ring-like events in $^{16}\text{O} - \text{Ag}/\text{Br}$ interactions at 60 AGeV/c in the framework of complex network analysis- N. Subba, A. Ahmed, **P. K. Haldar**, A. N. Tawfik, *International Journal of Modern Physics E* **30(01)** 2150002 (2021).
34. Nonvolatile resistive switching and synaptic characteristics of lead-free all-inorganic perovskite-based flexible memristive devices for neuromorphic systems - Abubakkar Siddik, **Prabir Kumar Haldar**, Tufan Paul, Ujjal Das, Arabinda Barman, Asim Roy and Pranab Kumar Sarkar, *Nanoscale* **13** 8864-8874 (2021).
35. An approach to explore exotic hadronic states in $^{24}\text{Mg} - \text{Ag}/\text{Br}$ interactions at 4.5 A GeV/c in framework of complex network analysis,- A. Ahmed, N. Subba, **P. K. Haldar**, A. N. Tawfik, *Eur. Phys. J. Plus* **136** 100 (2021).
36. VLF radio signal anomaly associated with geomagnetic storm followed by an earthquake at a subtropical low latitude station in northeastern part of India- B. Das, A. Sen, **P. K. Haldar** and S. Pal, *Indian J Phys.* <https://doi.org/10.1007/s12648-020-01966-2> (2021).
37. D-region ionospheric disturbances associated with the Extremely Severe Cyclone Fani over North Indian Ocean as observed from two tropical VLF stations- B. Das, S. Sarkar, **P. K. Haldar** S. K. Midya, S. Pal, *Advances in Space Research* **67** 75-86 (2021).

Year : 2020

38. Enhancement of data storage capability in a bilayer oxide based memristor for wearable electronic applications, - A. Siddik, **P. K. Haldar**, P. Garu, S. Bhattacharjee, U. Das, A. Barman, A. Roy, P. K. Sarkar, *J. Phys. D: Appl. Phys.* **53** 295103 (2020).
39. Wavelet Analysis of Produced Pions in $^{24}\text{Mg} - \text{Ag}/\text{Br}$ Interactions at 4.5 A GeV/c, - P. Saha,

N. Subba, A. Ahmed and **P. K. Haldar**, **Braz. J. Phys** <https://doi.org/10.1007/s13538-020-00736-z>,(2020).

40. Enhancement of luminescence behaviour of colloidal ZnO quantum dots coated with SiO₂ irradiated by Ni^{+7} ion-D. Chakdar, A. Siddik, N. Ghosh, G. Gope, and **P. K. Haldar**,**Advanced Science, Engineering and Medicine** **22**, 278-283,(2020).

Year : 2018

41. Multifractal analysis of multiparticle emission data in the framework of visibility graph and sandbox algorithm, - P. Mali, S. K. Manna, **P. K. Haldar**, A. Mukhopadhyay and G. Singh, **Physica A** **493**, 253-266, (2018).
42. Wavelet analysis of particle density function in nucleus-nucleus interactions, -S. K. Manna, **P. K. Haldar**, P. Mali, A. Mukhopadhyay and G. Singh, **Int. J. Mod. Phys. E** **27**, 1850009-1850025, (2018).

Year : 2017

43. Multifractal analysis of charged particle distributions using horizontal visibility graph and sandbox algorithm -P. Mali, S. K. Manna, **P. K. Haldar**, A. Mukhopadhyay and G. Singh, **Mod. Phys.Lett. A** **32**, 1750024-1750033 (2017).
44. Detrended analysis of shower track distribution in nucleus-nucleus interactions at CERN SPS energy Chaos -P. Mali, S. K. Manna, **P. K. Haldar**, A. Mukhopadhyay and G. Singh, **Chaos Soliton Fract** **94**,86-94, (2017).

Year : 2013

45. Ring and jet study on the azimuthal substructure of pions at CERN SPS energy-**P. K. Haldar**, S.K. Manna, P.Saha, D. Ghosh, **Pramana J. Phys** **80(04)**, 631-642, (2013)
46. Multidimensional Intermittency Study of Target Fragments at CERN SPS Energies - **P. K. Haldar**, S. K. Manna, P. Saha and D. Ghosh, **Astroparticle Physics** **42**,76-85, (2013).

Year : 2012

47. Dynamical fluctuations of pions for ring and jet-like events at SPS energy: an in-depth study with factorial correlator - P.K. Haldar, S.K. Manna, P.Saha, D. Ghosh, **Indian J Phys** **86(12)**, 1155-1162, (2012).
48. Peculiarities in the Distribution of Produced Particles emission in ^{24}Mg -Ag/Br interactions at 4.5

A GeV - **P. K. Haldar**, S.K. Manna, P.Saha, D. Ghosh, **Indian Journal of Pure and Applied Physics Vol. 50**, 156-160, (2012).

Year : 2011

49. Non-Statistical Fluctuations Of Pions For Ring- And Jet-Like Events At CERN SPS Energy - An In-Depth Analysis With Factorial Correlator - **P. K. Haldar**, S.K. Manna, P.Saha, D. Ghosh, **International Journal of Modern Physics E Vol. 20, No. 9**, 2027-2038, (2011).
50. Factorial correlators and oscillatory multiplicity moments study of ring and jet-like events in $^{16}O - Ag/Br$ interactions at 60 A GeV, -**P. K. Haldar** and S. K. Manna, **Can. J. Phys.** **89**,713-721, (2011).
51. Ring and jet-like structure and two-dimensional intermittency in nucleus-nucleus collisions at 200A GeV/c, -M. K. Ghosh, **P. K. Haldar**, S. K. Manna, A. Mukhopadhyay and G. Singh, **Nucl. Phys. A 858**,67-85, (2011).
52. Fluctuation pattern of shower and compound multiplicity distributions in nucleus-nucleus interactions at a few GeV, -D. Ghosh, A. Deb, M.Lahiri, P.Mandal, S. Biswas, J. Ghosh, S. Bhattacharyya, **P. K. Haldar** and D. Maity, **Int. J. Mod. Phys. E 20**,1287-1306, (2011).
53. Factorial correlators and oscillatory multiplicity moments at the CERN SPS energy for ring-like and jet-like events, -**P. K. Haldar** and S. K. Manna, **Chinese Phys. Lett.** **28**,012502, (2011).

Year : 2010

54. Levy index analysis for a multifractality and phase transition study of target fragments in ring-like and jet-like events, -D. Ghosh, A. Deb, A. Dhar(Mitra), R. Saha, D. Bhattacharya and **P. K. Haldar**, **Phys. Scr.** **82**,045201-045209, (2010).
55. Intermittency and related issues in $^{16}O - Ag/Br$ collision at 200A GeV/c, -M. K.Ghosh, **P. K. Haldar**, S. K. Manna, A. Mukhopadhyay and G. Singh, **Can. J. Phys** **88**, 575-584 (2010).
56. Void analysis of Target residues at SPS energies-. Sarkar, D. Ghosh, A. Deb, **P. K. Haldar** and R. Das, **Int. J. Mod. Phys. E 19**,407-417, (2010).
57. Levy index and multifragmentations of targets at SPS energy-evidence of both monofractality and multifractality-D. Ghosh, A. Deb, **P. K. Haldar**, S. Guptaroy and A. Dhar(Mitra), **Fractals** **18**,75-86, (2010).

Year : 2009

58. Azimuthal correlation and fractal study of compound hadrons (pions and protons) at Dubna and

SPS energies, -D. Ghosh, A. Deb, S. Ghosh, P. Mondal A. K. Mallik and **P. K. Haldar**, **Indian J. Phys.** **83**,1463 - 1485, (2009).

59. Ring type events and nuclear collision at SPS energies and nuclear refractive index-D. Ghosh, A. Deb, A. Dhar(Mitra) and **P. K. Haldar**, **Acta. Phys. Pol. B** **40**,2355-2361, (2009).

Year : 2008

60. Multifragmentations of targets at SPS energy-evidence of both monofractality and multifractality -D. Ghosh, A. Deb, S. Sarkar and **P. K. Haldar**, **Fractals** **16**,1-6, (2008).
61. Fluctuation and fractal characteristics of ring like and jet like events produced at SPS Energies-D. Ghosh, A. Deb, **P. K. Haldar** and S. Guptaroy, *Indian J. of Phys.* **82**,1339-1371. (2008).

Year : 2007

62. Pronounced pionic self-similarity in ring-like events in $^{16}O - Ag/Br$ interactions-D. Ghosh, A. Deb, **P. K. Haldar** and A. Dhar, **EPL** **80**,22003, (2007).
63. Self-affine scaling and non-thermal phase transition in target fragments of muon-nucleus interactions at high energy -D. Ghosh, A. Deb, **P. K. Haldar**, S.I. Ahmed and P. Ghosh, **Mod. Phys. Let. A** **22**,1759-1768, (2007).
64. Fractality of emission of compound multiplicity in $^{12}C - Ag/Br$ interactions at 4.5 A GeV -, D. Ghosh, A. Deb, S. Ghosh, P. Mondal and **P. K. Haldar**, **Can. J. Phys.** **85**,385-392, (2007).
65. Signature of void probability scaling in jet like events $^{16}O - Ag/Br$ interactions at 60 GeV/n-D. Ghosh, A. Deb, **P. K. Haldar** and S. Guptaroy, **Astropart. Phys.** **27**,127-133, (2007).
66. Dynamical fluctuation of compound multiplicity in nucleus-nucleus interactions at 4.5 A GeV -Evidence of projectile dependence of azimuthal asymmetry -D. Ghosh, A. Deb, S. Ghosh, P. Mondal and **P. K. Haldar**, **Indian J. Pure. A. Phys.** **45**,965-968, (2007).
67. Study of multidimensional fluctuation and non-thermal phase transition study in ring and jet like events in ultra-relativistic nuclear collisions -D. Ghosh, A. Deb, **P. K. Haldar** and S. Guptaroy, **Indian J. Pure. A. Phys.** **45**,419-424, (2007).
68. Azimuthal asymmetry and dynamical fluctuation of compound multiplicity in nucleus-nucleus collisions at ultra-relativistic energy-D. Ghosh, A. Deb, **P. K. Haldar** and S. Guptaroy, **Can. J. Phys.** **85**,1035-1043, (2007).

Year : 2006

69. Strong self-similar fluctuations of target fragments in ring-like events in Ultra-relativistic nuclear collision-D. Ghosh, A. Deb, S. Sarkar and **P. K. Haldar**, **Chinese Phys. Letts.** **23**,2944-2947, (2006).
70. Dynamical azimuthal fluctuation of target fragments in forward and backward hemisphere in case of $^{32}S - Ag/Br$ interaction -D. Ghosh, A. Deb, S. Sarkar and **P. K. Haldar**, **Indian J. Phys.** **80**,1029-1032, (2006).
71. Maximum pseudorapidity gap analysis in nuclear interaction at few GeV to few hundred GeV -D. Ghosh, A. Deb, **P. K. Haldar**, and S. R. Sahoo, **Fizika B (Zagrab)** **12**,133-140, (2006).
72. Fragmentation of targets in Muon-nucleus interactions at (420 ± 45) GeV strong two particle azimuthal correlation -D. Ghosh, A. Deb, **P. K. Haldar**, P. Ghosh and S.I. Ahmed, **Fizika B (Zagrab)** **15**,107-114, (2006).
73. Azimuthal pion fluctuation and phase transition in ultra-relativistic ring like and jet like events-D. Ghosh, A. Deb, **P. K. Haldar** and S. Guptaroy, **Indian J. Phys.** **80**,807-813, (2006).
74. Pronounced fluctuation of target fragments in forward hemisphere only in Ultra-relativistic nuclear collision-D. Ghosh, A. Deb, S. Sarkar and **P. K. Haldar**, **Chinese Phys. Letts.** **23**,1441, (2006).
75. Evidence of strong pion fluctuation in jet like events in $^{32}S - Ag/Br$ interaction -D. Ghosh, A. Deb, **P. K. Haldar** and S. Guptaroy, **Chinese Phys. Lett.** **23**,815, (2006).

Year : 2005

76. Evidence of fractal behavior of pions and protons in high energy interaction - an experimental Investigation -D. Ghosh, A. Deb, S. Pal, **P. K. Haldar** , S. Bhattacharyya, P. Mondal, S. Biswas and M. Mondal, **Fractals** **13**,325-329, (2005).
77. Compound multiplicity distribution in nucleus-nucleus interactions - phase transition study -D. Ghosh, A. Deb, P. Mondal, S. Biswas and **P. K. Haldar**, **Fizika B** **14**,317-326, (2005).

Year : 2004

78. Multifractal behaviour of nuclear fragments in high energy leptonic interactions-D. Ghosh, A. Deb, M. B. Lahiri , P. Ghosh and S. I. Ahmed and **P. K. Haldar**, **Phys. Rev. C** **70**, 054903-054910, (2004).
79. Proton emission in nucleus nucleus interactions at 14.5 A GeV - Evidence of monofractality -D. Ghosh, A. Deb, S. R. Sahoo, **P. K. Haldar** and M. Mondal, **EPL** **65**,472-477, (2004).
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