

List of publications in refereed journals by members of the *Applied Nuclear Physics Division* from 2005 to 2010:

2010:

1. *Experimental lifetimes of some levels belonging to the $4p^45p$ configuration of KrII using the cascade-photon-coincidence technique*, S. Karmakar and M. B. Das, *Euro. Phys. Jour D* **59** (2010) 361.
2. *Realistic three dimensional simulation on the performance of micromegas*, Purba Bhattacharya, Supratik Mukhopadhyay, Nayana Majumdar, Sudeb Bhattacharya, *Nucl. Instrum. Meth. in Phys. Res. A (in press)* (2010) [doi: 10.1016/j.nima.2010.07.026].
3. *Neutron-gamma discrimination by pulse analysis with superheated drop detector*; Mala Das, S. Seth, S. Saha, S. Bhattacharya, P. Bhattacharjee; *Nucl. Instrum. Meth. in Phys Res A (in press)* (2010) [doi:10.1016/j.nima.2010.06.361].
4. *High spin states and isomeric decays in doubly-odd ^{208}Fr* , D. Kanjilal, S. Bhattacharya, A.Goswami, R. Kshetri, R. Rout, S. Saha, R.K. Bhowmik, J. Gehlot, S. Muralithar, R.P. Singh, G. Jnaneswari, G. Mukherjee, B. Mukherjee, *Nucl. Phys. A* **842**, 1 (2010).
5. *Study of timing properties of single gap high-resistive bakelite RPC*, S. Biswas, S. Bhattacharya, S. Bose, S. Chattopadhyay, S. Saha, Y.P. Viyogi, *Nucl. Instrum. Meth. in Phys. Res. A* **617**, 138 (2010).
6. *Band crossing in shears band in ^{108}Cd* , Santosh Roy, Sukalyan Chattopadhyay, S. Bhattacharya, A.Goswami, Pradip Dutta, H.C. Jain, P.K. Joshi, R. K. Bhowmik, R. Kumar, S. Muralithar, R.P.Singh, P.V. Madhusudhana Rao, *Phys. Rev. C* **81**, 054311 (2010).

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1. *Some Physical Aspects of Positron Annihilation Tomography: a critical review*, Bichitra Nandi Ganguly, Nagendra Nath Mondal, Maitreyee Nandy, and Frank Roesch, *Journal of Radioanalytical and Nuclear Chemistry* **279**, 685-698 (2009).
2. *Hydrogen bonded Supra Molecular Structure as studied by Positron Annihilation Spectroscopy*, Bichitra Ganguly, *Material Science Forum* **607**, 227-231 (2009).
3. *Chemical transformation of crystalline hafnium tetrafluoride studied by perturbed angular correlation spectroscopy*, C. C. Dey, *Z. Naturforsch.* **64a**, 739 (2009).
4. *3D field simulation in GEM-type structures*, N. Majumdar, S. Mukhopadhyay, S. Bhattacharya, *Journal of Instrumentation*, **4**, P10013 (2009).
5. *Electrostatics of Micromesh based Detectors*, S. Mukhopadhyay, N. Majumdar, S. Bhattacharya, *Journal of Instrumentation*, **4**, P11004 (2009).
6. *3D electrostatic field simulation of a resistive plate chamber*, N. Majumdar, S. Mukhopadhyay, S. Bhattacharya, *Nucl. Instrum. Meth. in Phys Res A* **602**, 719 (2009).
7. *Cluster dynamics in RPCs – A 3D electrostatic analysis*, S. Mukhopadhyay, N. Majumdar, S. Bhattacharya, *Nucl. Instrum. Meth. in Phys. Res. A* **602**, 731 (2009).
8. *A study of three-dimensional edge and corner problems using the neBEM solver*, Supratik Mukhopadhyay, Nayana Majumdar, *Engineering Analysis with Boundary Elements* **33**, 105 (2009).
9. *Mn doping in ZnO nanoparticles: effects investigated by positron lifetime and Doppler broadening studies*, B. Roy, B. Karmakar, M. Pal, and P.M.G. Nambissan, *Phys. Stat. Solidi C* **6** 2572 (2009).

10. *Positron annihilation studies of NiO nanoparticles prepared through two different chemical routes*, Soumen Das, Tandra Ghoshal and P.M.G. Nambissan, *Phys. Stat. Solidi C* **6** 2569 (2009).
11. *Li³⁺ ion irradiated effects on polyamide nylon6,6 studied by positron annihilation lifetime and Doppler broadening spectroscopy*, Rajendra Prasad, Rajesh Kumar, P.M.G. Nambissan, Fouran Singh and S. Asad Ali, *Phys. Stat. Solidi C* **6** 2442 (2009).
12. *o-Ps lifetime, free volume and Doppler broadening spectroscopy (DBS) studies of 50 MeV Li³⁺ ion irradiated polystyrene*, S. Asad Ali, Rajesh Kumar, P.M.G. Nambissan, Fouran Singh and Rajendra Prasad, *Phys. Stat. Solidi C* **6** 2435 (2009).
13. *Characterization of ion-implantation-induced defects in certain technologically important materials by positron annihilation*, P.M.G. Nambissan, *Defense Sci. Journal* **59** 329 (2009).
14. *Vacancy-type defects and their evolution under Mn substitution in single crystalline ZnO nanocones studied by positron annihilation*, Tandra Ghoshal, Soumitra Kar, Subhajit Biswas, S.K. De and P.M.G. Nambissan, *J. Phys. Chem. C* **113** 3419 (2009).
15. *Cadmium oxide octahedrons and nanowires on the micro-octahedrons: a simple solvothermal synthesis*, Tandra Ghoshal, Subhajit Biswas, P.M.G. Nambissan, Gautam Majumdar and S. K. De, *Crystal Growth and Design* **9** 1287 (2009).
16. *Development of linseed oil-free bakelite resistive plate chambers*, S. Biswas, S. Bhattacharya, S. Bose, S. Chattopadhyay, S. Saha, Y.P. Viyogi, *Nucl. Instrum. Meth. in Phys. Res. A* **604**, 310 (2009).
17. *Determination of depth of an etch pit through studies of diffraction rings*, B Basu, S. Dey, A. Maulik, S. Raha, S. Saha, Swapan K. Saha, and D. Syam., *Radiation Measurements* **44**, 359 (2009).
18. *Electric field distribution and simulation of avalanche formation due to the passage of heavy ions in a parallel grid avalanche counter*, D. Kanjilal and S. Saha, *Pramana* **72**, 833 (2009).
19. *Performances of linseed oil-free bakelite RPC prototypes with cosmic ray muons*, S. Biswas, S. Bhattacharya, S. Bose, S. Chattopadhyay, S. Saha, M. K. Sharan and Y. P. Viyogi, *Nucl. Instrum. Meth. in Phys. Res. A* **602**, 749 (2009).
20. *High Voltage Power Supply for RPC detectors*, S. Bose, S. Saha, S. Bhattacharya, *Nucl. Instrum. Meth. in Phys. Res. A* **602**, 842 (2009).
21. *Control system for a four-component gas mixing unit*, S. Bose, S. Biswas, S. Saha, M.K. Sharan, S. Bhattacharya, *Nucl. Instrum. Meth. in Phys. Res. A* **602**, 839 (2009).
22. *INO prototype detector and data acquisition system*, Anita Behere, M. S. Bhatia, V.B. Chandratre, V.M. Datar, P. K. Mukhopadhyay, Satyajit Jena, Y.P. Viyogi, Sudeb Bhattacharya, Satyajit Saha, Sarika Bhide, S.D. Kalmani, N.K. Mondal, P. Nagraj, B.K. Nagesh, Shobha K. Rao, L.V. Reddy, M. Saraf, B. Satyanarayana, R.R. Shinde, S. S. Upadhya, P. Verma, Saikat Biswas, Subhasish Chattopadhyay, P.R. Sarma, *Nucl. Instrum. Meth. in Phys. Res. A* **602**, 784 (2009).
23. *Coherence resonance in a uni-junction transistor relaxation oscillator*, Md. Nurujjaman, P. S. Bhattacharya, A. N. Sekar Iyengar, and Sandip Sarkar, *Phys. Rev. E* **80**, 015201 (2009).

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1. *A perturbed angular correlation spectrometer for material science studies*, C. C. Dey, *Pramana*, **70**, 835 (2008).
2. *Computation of 3D electrostatic weighting field in Resistive Plate Chambers*, N. Majumdar, S. Mukhopadhyay, S. Bhattacharya, *Nucl. Instrum. Meth. in Phys. Res. A* **595**, 346 (2008).

3. *Factors affecting the precision of electrostatic computation of 3D MEMS structures*, N. Majumdar, S. Mukhopadhyay, *The African Physical Review*, Vol. 2, Special Issue, Part II (Materials): 0087, 170 (2008).
4. *Structural defects in Mn²⁺ incorporated ZnS nanoparticles as seen through positron annihilation measurements*, Subhajit Biswas, Soumitra Kar, Subhadra Chaudhuri and P.M.G. Nambissan, *J. Phys. : Condens. Matter* **20** 235226 (2008).
5. *Positron annihilation spectroscopic studies of solvothermally synthesized ZnO nanobipyramids and nanoparticles*, Tandra Ghoshal, Subhajit Biswas, Soumitra Kar, Subhadra Chaudhuri and P.M.G. Nambissan, *J. Chem. Phys.* **128** 074702 (2008). [Also published in *Virtual Journal of Nanoscale Science & Technology* **17** (8), February 25, 2008.]
6. *Positron lifetime studies of the dose dependence of nanohole free volumes in ion-irradiated conducting poly-(ethylene-oxide)-salt polymers*, Rajesh Kumar, Udayan De, P.M.G. Nambissan, M. Maitra, S. Asad Ali, T. R. Middy, S. Tarafdar, F. Singh, D.K. Awasthi and Rajendra Prasad. *Nucl. Instrum. Meth. Phys. Res. B* **266** 1783 (2008).
7. *Positron annihilation spectroscopy and specific heat study of neon ion irradiated MgB₂*, A. Talapatra, S. K. Bandyopadhyay, P.M.G. Nambissan, Pintu Sen, V. Ganesan, *Phys. Lett. A* **372** 1521 (2008).
8. *An active drop counting device using condenser microphone for superheated emulsion detector*, Mala Das, A. S. Arya, C. Marick, D. Kanjilal and S. Saha, *Rev. Sci. Instr.* **79**, 113301 (2008).
9. *Charge response of polyethylene terephthalate polymers (PET) to light and heavy nuclei*, B Basu, S. Dey, B. Fischer, A. Maulik, S. Raha, S. Saha, S. K. Saha, D. Syam. *Radiation Measurements* **43**, S95 (2008).
10. *Polyethylene terephthalate polymers at mountain altitude as cosmic ray heavy particle detector*, B Basu, S Biswas, S. Dey, A. Maulik, A Mazumder, S. Raha, S. Saha, S. K. Saha, D. Syam. *Radiation Measurements* **43**, S262 (2008).
11. *A theory of "fuzzy" edge detection in the light of human visual system*, K. Ghosh, S. Sarkar and K. Bhaumik, *Journal of Intelligent Systems* **17**, 229 (2008).
12. *Abrupt change of rotation axis in ¹⁰⁹Ag*, P. Datta, S. Roy, S. Pal, S. Chattopadhyay, S. Bhattacharya, A. Goswami, M. Saha Sarkar, J.A. Sheikh, Y. Sun, P.V. Madhusudhana Rao, R.K. Bhowmik, R. Kumar, N. Madhavan, S. Muralithar, R.P. Singh, H.C. Jain, P.K. Joshi, Amita, *Phys. Rev. C* **78**, 021306 (2008).
13. *Experimental study of the 2p-2h band in ¹¹¹Sn*, S. Ganguly, P. Banerjee, I. Ray, R. Kshetri, R. Raut, S. Bhattacharya, M. Saha-Sarkar, A. Goswami and S.K. Basu, *Phys. Rev. C* **78**, 037301 (2008).
14. *A GEANT-based study of atmospheric neutrino oscillation parameters at INO*, Abhijit Samanta, Sudeb Bhattacharya, Ambar Ghosal, Kamales Kar, Debasish Majumdar, Amitava Raychaudhuri, *Int. J. Mod. Phys. A* **23**, 233 (2008).

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1. *Positronium interactions in liquids and porous substances*, Bichitra Ganguly, Debarshi Gangopadhyay, Dhanadeep Dutta, Sujib Chatterjee, Tapas Mukherjee and Binayak Dutta Roy, *Radiation Physics and Chemistry* **76**(2), 263-270 (2007).
2. *Behavior of hafnium fluoride octahedral complex in HF at low temperature studied by TDPAC*, C. C. Dey, *Hyperfine Interact.* **175**, 185 (2007).

3. *High spin structure of ^{35}Cl and the sd-fp shell gap*, R. Kshetri, M. Saha Sarkar, I. Ray, P. Banerjee, S. Sarkar, R. Raut, A. Goswami, J. M. Chatterjee, S. Chattopadhyay, U. Datta Pramanik, A. Mukherjee, C. C. Dey, S. Bhattacharya, B. Dasmahapatra, Samit Bhowal, G. Gangopadhyay, P. Datta, H.C. Jain, R.K. Bhowmik, S. Muralithar, R.P. Singh and R. Kumar, *Nucl. Phys. A* **781**, 277 (2007).
4. *Indication of Onset of collectivity in ^{30}P* , I. Ray, M. Roy Basu, R. Kshetri, M. Saha Sarkar, S. Sarkar, P. Banerjee, S. Chattopadhyay, C. C. Dey, A. Goswami, J. M. Chatterjee, A. Mukherjee, S. Bhattacharya, B. Dasmahapatra, P. Datta, H.C. Jain, R. K. Bhowmik, S. Muralithar and R. P. Singh, *Phys. Rev. C* **76**, 034315 (2007).
5. *Lifetime measurement of some excited states belonging to the $3p^4 nd$ ($n=4-6$) configuration of Ar II*, S. Karmakar and M. B. Das, *Pramana* **69**, 477 (2007).
6. *Simulation of 3D electrostatic configuration in gaseous detectors*, N. Majumdar and S. Mukhopadhyay, *Journal of Instrumentation* **2** P09006 (2007).
7. *Use of the neBEM solver to compute the 3D electrostatic properties of comb drives*, S. Mukhopadhyay, N. Majumdar, *The African Physical Review*, Vol. 1, Special Issue, Part I (Microfluidics): 0015, 31 (2007).
8. *Positron annihilation spectroscopic studies of the influence of heat treatment on defect evolution in hybrid MWCNT-polyacrylonitrile based carbon fibers*, K. Chakrabarti, P.M.G. Nambissan, C.D. Mukherjee, K.K. Bardhan, C. Kim and K.S. Yang, *Carbon* **45**, 2777 (2007).
9. *Defect-related aspects of Mn-doped ZnS nanorods and morphological changes revealed from positron annihilation spectroscopy*, P.M.G. Nambissan, Subhajit Biswas, Soumitra Kar and Subhadra Chaudhuri, *Physica Status Solidi (c)* **4** 3889 (2007).
10. *Thermal evolution of boron irradiation induced defects in pre-doped Si revealed by positron annihilation experiments*, P.M.G. Nambissan, P.V. Bhagwat and M.B. Kurup, *J. Appl. Phys.* **101** 113526 (2007).
11. *Substitution-induced structural transformation in Mn-doped ZnS nanorods studied by positron annihilation spectroscopy*, Soumitra Kar, Subhajit Biswas, Subhadra Chaudhuri and P.M.G. Nambissan, *Nanotechnology* **18** 225606 (2007).
12. *Retinomorphing Image Processing*, K. Ghosh, K. Bhaumik and S. Sarkar, *Progress in Brain Research*, **168**, 175 (2007).
13. *Understanding image structure from a new multi-scale representation of higher order derivative filters*, K. Ghosh, S. Sarkar and K. Bhaumik, *Image and Vision Computing*, **25**, 1228 (2007).
14. *Study of yrast band in ^{155}Tm* , R. Raut, S. Bhowal, S. Ganguly, R. Kshetri, P. Banerjee, S. Bhattacharya, R.K. Bhowmik, B. Dasmahapatra, G. Gangopadhyay, A. Mukherjee, S. Muralithar, M. Saha Sarkar, R.P. Singh, A. Goswami, *Nucl. Phys. A* **794**, 1 (2007).
15. *Study of intruder bands in ^{112}Sn* ; S. Ganguly, P. Banerjee, I. Ray, R. Kshetri, R. Raut, S. Bhattacharya, M. Saha Sarkar, A. Goswami, S. Mukhopadhyay, A. Mukherjee, G. Mukherjee, S.K. Basu, *Nucl. Phys. A* **789**, 1 (2007).
16. *Positron lifetime studies and coincidence Doppler broadening spectroscopy of $\text{Al}_{94-x}\text{Mg}_6\text{Sc}_x$ ($x = 0$ to 0.6) alloy*, M.S. Kaiser, P.M.G. Nambissan, M.K. Banerjee, A. Sachdeva and P.K. Pujari, *J. Mater. Sci.* **42** (2007) 2618.

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1. *Spin-parity measurements in the neutron-rich $N \sim 20$ ^{34}P and ^{36}S nuclei*, Krishichayan, A. Chakraborty, S. Mukhopadhyay, S. Ray, N.S. Pattabiraman, S.S. Ghugre, R. Goswami, A.K.

- Sinha, S. Sarkar, U. Garg, P.V. Madhusudhana Rao, S.K. Basu, B.K. Yogi, L. Chaturvedi, A. Dhal, R.K. Sinha, M. Saha Sarkar, S. Saha, R. Singh, R.K. Bhowmik, A. Jhingan, N. Madhavan, S. Muralithar, S. Nath, R.P. Singh, and P. Sugathan, *Eur. Phys. J. A* **29**, 151 (2006).
2. *Design of lowpass filter by multi-scale even order Gaussian derivatives*, S. Karmakar, K. Ghosh, S. Sarkar and S. Sen, *Signal Processing* **86**, 3923 (2006).
 3. *A possible explanation of the low-level brightness-contrast illusions in the light of an extended classical receptive field model of retinal ganglion cells*, K. Ghosh, S. Sarkar and K. Bhaumik, *Biological Cybernetics* **94**, 89 (2006).
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 5. *India-based Neutrino Observatory – the present status*, Sudeb Bhattacharya, *Prog. in Part. and Nucl. Phys.* **57**, 299 (2006).
 6. *High spin states in ^{143}Sm* , R. Raut, S. Ganguly, R. Kshetri, P. Banerjee, S. Bhattacharya, B. Dasmahapatra, A. Mukherjee, G. Mukherjee, M. Saha Sarkar, A. Goswami, G. Gangopadhyay, S. Mukhopadhyay, Krishichayan, A. Chakraborty, S.S. Ghugre, T. Bhattacharjee, S.K. Basu, *Phys. Rev. C* **73**, 044305 (2006).
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 10. *Surface modification of mica due to titanium sputtering as studied by positron annihilation*, Bichitra Ganguly, Nikolay Djourellov, Takenori Suzuki, and Srinanda Kundu, *Applied Radiation and Isotopes* **64**, 651-55 (2006).
 11. *Simulation of Three-Dimensional Electrostatic Field Configuration in Wire Chambers: A Novel Approach*, N. Majumdar, S. Mukhopadhyay, *Nuclear Instruments and Methods in Physics Research A* **566**, 489 (2006).
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 13. *S. Mukhopadhyay, N.Majumdar, Effect of Finite Dimensions on the Electric Field Configuration of Cylindrical Proportional Counters*, *IEEE Transactions on Nuclear Sciences* **53**, 539 (2006).
 14. *ALICE: Physics Performance Report, Volume II*, S Mukhopadhyay, N. Majumdar in ALICE Collaboration, *J. Phys. G: Nucl. Part. Phys.* **32**, 1295 (2006).
 15. *Experimental lifetimes of some level belonging to the $5p^46d$ configuration of XeII*, M. B. Das and S. Karmakar, *Euro. Phys. J. D* **40**, 339 (2006).
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1. *Observation of anti-magnetic rotation in ^{108}Cd* , P. Datta, S. Chattopadhyay, S. Bhattacharya, T.K. Ghosh, A. Goswami, S. Pal, M. Saha Sarkar, H.C. Jain, P.K. Joshi, R.K. Bhowmik, R. Kumar, N. Madhaban, M. Rao, R.P. Singh, *Phys. Rev C* **71**, 041305 (R) (2005).
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3. *Structure of odd-odd ^{136}La at high spin*, Tumpa Bhattacharjee, Somen Chanda, Sarmishtha Bhattacharyya, Swapan Kumar Basu, R.K. Bhowmik, S. Muralithar, R.P. Singh, N.S. Pattabiraman, S.S. Ghugre, U. Datta Pramanik and S. Bhattacharya, *Nucl. Phys. A* **750**, 199 (2005).
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5. *Nuclear spin relaxation in some non-viscous media using the ^{181}Hf probe*, C. C. Dey, *Hyperfine Interact.* **163**, 121 (2005).
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7. *Effect of Temperature on Positronium Annihilation in Silica Gel*. Dhanadeep Dutta, Bichitra Ganguly, Sujib Chatterjee, Tapas Mukherjee, *J. Phys. Chem. B.* **109**, 100092-95,(2005).
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11. *Experimental lifetimes of some levels of KrI*, M. B. Das and S. Karmakar, *J. Quant. Spectrosc. & Rad. Transfer* **91**, 227 (2005).
12. *Lifetime measurement of some levels belonging to the $5p^5nd$ ($n=6,7,8,9$) configuration of XeI*, M.B.Das and S.Karmakar, *Physica Scripta* **71**, 170 (2005).
13. *Radiative lifetime of some excited states of neutral Xenon*, M.B.Das and S.Karmakar, *Euro. Phys. J. D* **32**, 285 (2005).
14. *Lifetime measurement of some excited states of neutral Neon*, M. B. Das, D. Mitra and S. Karmakar, *Physica Scripta* **71**, 599 (2005).