RESUME *of* **Dr. Dhruba Gupta**

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EDUCATION

PhD Physics 2001 (Saha Institute of Nuclear Physics/University of Calcutta)
MSc Physics 1st class, 1994 (University College of Science/University of Calcutta)
BSc Physics 1st class, 1992 (Vivekananda College/University of Calcutta)
High School 1st division, 1989 (St. Lawrence High School/WBCHSE)
Secondary 1st division, 1987 (St. Lawrence High School/WBBSE)

EMPLOYMENT

Associate Professor of Physics: Bose Institute (2013 - present)

Assistant Professor of Physics: Bose Institute (2008 - 2013)

Postdoctoral Research Associate/CSIR Pool Officer: Physics Group, Variable Energy Cyclotron Centre, Dept of Atomic Energy, Govt of India, Kolkata, INDIA (2006 - 2008)

Postdoctoral Research Associate/Visiting Scientist: Institut de Physique Nucleaire, IN2P3-CNRS, Universite de Paris-Sud, 91406 Orsay Cedex, FRANCE (2004 - 2006)

Postdoctoral Research Associate: Department of Physics & Astronomy, University of North Carolina at Chapel Hill & Triangle Universities Nuclear Laboratory, USA (2001 - 2004)

HONORS *&* AWARDS

CSIR Senior Research Associateship (Scientists' Pool Scheme) 2007
Young Physicist of The Indian Physical Society 2000
Council of Scientific and Industrial Research Fellowship 1995
Saha Institute of Nuclear Physics Fellowship 1995
University of Notre Dame, USA Graduate Research Assistantship 1995
University Grants Commission Fellowship 1994
University of Calcutta Merit Scholarship 1992-94
National Merit Scholarship in Higher Secondary 1989
National Merit Scholarship in Secondary 1987

ACADEMIC VISITS ABROAD

England, France, Germany, Finland, Poland, Switzerland, USA

RESEARCH GRANTS

"Astrophysical S-factor from nuclear reactions with a rare isotope beam of ^{7}Be"
Sponsor: ISRO Respond (2015), 38.5 Lakh 3 years
Role: Principal Investigator

RESEARCH INTERESTS

Nuclear physics with rare isotope beams

At present, one is faced with challenging science questions like how were the heavy elements from iron to uranium made? What is dark matter? What is the nature of dark energy? How did the Universe begin? Addressing the first question involves study of nuclei which interact with strong short-range forces. Nuclear science is primarily still a phenomenological, experimental science where one measures most nuclear quantities. Recent advancements in nuclear science allows us to study very neutron and proton rich exotic nuclei (rare isotopes) at the limits of stability. Presently a world-wide effort is put into pursuing rare isotope science to study nuclear structure, reactions and astrophysics. Experiments with the new isotopes produced will lead to a comprehensive understanding of nuclei and the origin of the elements in the cosmos. New rare isotope beam facilities as well as upgrades are coming up at ISOLDE-CERN in Switzerland, GSI in Germany, GANIL in France, RIKEN in Japan, NSCL, ANL, HRIBF, TAMU in USA and TRIUMF in Canada. It is obvious that cutting edge experiments in nuclear science would pervade the next decade.

(a) Experiment

Search for higher excited states of ^{8}Be to study the cosmological ^{7}Li problem*
Approved experiment (IS 554) at CERN-HIE-ISOLDE (2012)
Role: Principal Investigator

We would like to study the unresolved ^{7}Li abundance anomaly by carrying out experiments that destroy the rare isotope ^{7}Be, the main source of ^{7}Li. Utilizing a 35 MeV ^{7}Be beam from HIE-ISOLDE, we would like to measure the (d,p) and (d,d) reactions with T-REX. The higher beam energy, for the first time, would allow us to measure higher excitation energies in ^{8}Be up to about 20 MeV. With a wider angular coverage, we can make improved average cross-section measurement without assuming isotropy done in earlier works.

Astrophysical S-factor from nuclear reactions with a rare isotope beam of ^{7}Be

Another experiment intended to be done at HIE-ISOLDE involves breakup of ^{7}Be in the presence of heavy targets. This is due to the fact that the production of ^{7}Li is linked to the production of ^{7}Be, which in turn, is related to the reaction $^3\mathrm{He} + {}^4\mathrm{He} \rightarrow {}^7\mathrm{Be} + \gamma$. Measuring this reaction rate is of utmost importance to shed light on ^{7}Li abundance anomaly. The radiative capture cross sections at low energies are very hard to measure directly and thus need extrapolations. A new approach to measuring the reaction rate could be measuring the reverse reaction of Coulomb dissociation of ^{7}Be, preferably in the presence of a heavy target. For low relative breakup energies of fragments, one can extract the inverse reaction at astrophysical energies. In future, Coulomb breakup experiments will be an important source of information about nuclear reactions of astrophysical interest inaccessible by other means. Related prior-form DWBA calculations are underway to shed light on expected count rates of the experiment.

Study of n-p pairing through two-nucleon transfer reactions

At the rare isotope facility GANIL, Caen, France, we carried out an experiment aimed to study two nucleon n-p transfer reactions on two nuclei, a mid-shell nucleus ^{48}Cr, a candidate for n-p pairing

correlations, and the doubly magic nucleus ^{56}Ni which will not show any pairing effects. On both these nuclei we measured (p,^{3}He) and (d,a) reactions in order to investigate the competition between T=1 and T=0 pairing and probe n-p pairing. We are carrying out a part of the data analysis in the NPTool framework in collaboration with IPN, Orsay, France. The preliminary analysis shows that n-p pairing in ^{56}Ni is mainly of isovector type.

Two proton transfer reactions

At GANIL in France, I was involved in the study of two proton transfer reactions. Two neutron transfer reaction is used to study the correlation of two halo neutrons in halo nuclei. Two proton transfer reactions are used to study very neutron rich nuclei but the recoil particles are unbound in this case and one has to detect the decay products. We carried out the (α,^{6}Be) transfer reaction and ^{6}Be has a narrow unbound ground state decaying to $\alpha + p + p$. This type of experiments require large solid angle and good granularity of the recoil particle telescope. The new MUST2 silicon strip detector array is particularly suited for this type of multiparticle events detection. We used this array at GANIL to measure the ^{22}Ne(α,^{6}Be)^{20}O reaction at 30 MeV/A in inverse kinematics, populating states in ^{20}O. The idea is to remove two protons from an already neutron-rich RIB, and thus getting access to even more exotic nuclei. Future experiments are planned to measure ^{26}Ne(α,^{6}Be)^{24}O, ^{6}He(α,^{6}Be)4n. In particular, there is no conclusive evidence yet of a bound/resonant multi-neutron. If the tetraneutron (neutral nuclei) is observed, it will require important revisions of existing models of nuclear forces.

Giant monopole resonance in unstable nuclei

At GANIL, I was involved in testing a new setup to study complete giant resonances spectra in exotic nuclei. To measure the ^{56}Ni giant monopole resonance, ^{56}Ni(d, d') reaction is used with a secondary 50 MeV/A ^{56}Ni beam and the active target detector MAYA. The excitation energy spectrum of ^{56}Ni presents some promising indications of isoscalar resonances. This test experiment may lead to exciting possibilities to study evolution of the nuclear incompressibilities K_∞ with isospin. This is a new detector concept (4π coverage, low energy threshold, effective thick target) and is an excellent tool for studying the properties of exotic nuclei by low intensity secondary beams, where highest efficiency and good resolution in inverse kinematics is essential.

Analyzing power puzzle

At the University of North Carolina at Chapel Hill and Triangle Universities Nuclear Laboratory (TUNL) USA, I was involved in high precision measurements of analyzing powers in low energy $p - p$ scattering. It is well known that such measurements are valuable means of probing the long-range nuclear interaction. Measuring the very small analyzing powers ($\leq 10^{-3}$) to adequate accuracy, however, is extremely difficult. The polarized ion source generated intense beams and the gas jet target provided a thick target with virtually no background. The $p - p$ scattering measurements would be immensely useful at $E \leq 10$ MeV, since ^3P_J interactions are not uniquely determined from existing $p - p$ data. I also participated in other low energy experiments including $\overrightarrow{p}$ + ^{3}He scattering. The results show discrepancies between data and rigorous theoretical calculations analogous to the existing "A_y puzzle" in Nd scattering.

Fragment emission mechanisms in low energy light heavy-ion reactions

At the Variable Energy Cyclotron Centre, Kolkata, I was involved in experiments studying the entrance channel dependence of fragment emission yield. This helps to decipher different reaction mechanisms (quasi-elastic, deep-inelastic transfer and orbiting, fusion-fission) contributing to fragment emission. Several systems (e.g 145-220 MeV ^{20}Ne + ^{12}C, ^{27}Al) have been studied using heavy ion beams from VECC and BARC-TIFR pelletron. The enhanced yields of fragments indicate the survival of orbiting

like process in ^{20}Ne, ^{16}O + ^{12}C system.

Direct and sequential breakup of ^{7}Li

At Saha Institute of Nuclear Physics, Kolkata, I worked on breakup reaction studies of the ^{7}Li nucleus. The breakup of composite nuclear projectiles in the field of atomic nuclei is an important reaction mode. The nucleus ^{7}Li, although loosely bound, is stable and its structure including its resonant excited states is known. At wide fragment separation angles, the breakup measurements are especially challenging due to low yield. The incident ^{7}Li may be excited to a high lying particle unstable state which subsequently decays into an α and t at large angular separation. Alternatively, the ^{7}Li may be excited directly into the continuum with strong final-state interactions scattering the fragments to wide angles and consequently large $\alpha - t$ relative energies. At the BARC-TIFR pelletron, India, we carried out experiments on breakup of 42 MeV ^{7}Li with several targets. We found that unlike the direct part, the sequential breakup cross sections from resonant states do not diminish with angle appreciably and some indications of breakup from higher excited states were found. The DWBA and coupled channel calculations indicate significant contributions of multistep processes. The study also demonstrates that similar wide angle measurements involving unstable halo nuclei would be extremely useful as controversies exist regarding their resonant states.

(b) Theory

Isospectral bound state potential from DDM3Y effective interaction

Theoretical investigation of $5/2^+$ resonance state of ^{11}Be was carried out using Supersymmetric Quantum Mechanics (SQM). The original two-body potential (^{10}Be + n) was constructed microscopically using a DDM3Y effective NN interaction. SQM converted this potential to an isospectral potential which is effective for detecting resonance states in the continuum. The resonance energies of the $5/2^+$, $3/2^-$ and $3/2^+$ states are in good agreement with the experimental values. At present we are working on the resonance states of the newly discovered nucleus ^{15}Be (^{14}Be + n) in the above framework. Our preliminary calculations match very well the two lowest resonance states of ^{15}Be.

Folding model analysis of proton scattering from exotic nuclei

I am involved in a theoretical study of proton scattering from exotic nuclei. A folding model framework is used to incorporate structure explicitly, where a suitable effective nucleon-nucleon interaction is folded with realistic densities of different nuclei. The goal is to study the scattering from normal to exotic nuclei with an effective NN interaction which gives a unified description of radioactivity, nuclear matter and nuclear scattering.

I studied the proton scattering on neutron rich oxygen isotopes ^{18,20,22}O in a folding model formalism of nucleon-nucleus optical potential and inelastic form factor. Microscopic calculations using HFB and QRPA densities with the DDM3Y effective interaction were carried out. The results reflect a high neutron contribution to the excited state and a large β value for ^{20}O as compared to ^{18,22}O. The theoretical analysis of proton scattering from mirror nuclei ^{18}Ne and ^{18}O using two different effective interactions provide equivalent descriptions to the data. The density dependence parameters obtained from nuclear matter calculations and used in the analysis also provide a good estimate for the nuclear mean free path. The formalism unifies radioactivity, nuclear matter and nuclear scattering.

I have also carried out a detailed theoretical analysis of proton scattering from stable and neutron rich He and Li isotopes ^{4,6,8}He,^{6,7,9,11}Li. To understand the formation of halo around the core of these exotic nuclei, a systematic study starting from their stable isotopes is essential. The scattering of protons differ as structure and reaction dynamics change with changing neutron numbers of nuclei from normal to exotic. The elastic scattering data are fitted in an optical model framework using

phenomenological and microscopic potentials. The folded potentials required significant renormalizations, indicating channel coupling, which vary negligibly with energy for ^{6}He, ^{11}Li as compared to ^{6}Li and ^{8}He. The fitted potentials are used in DWBA calculations of nuclear excitation with transferred angular momentum l. Interestingly, the inelastic scattering of ^{11}Li reflects an excitation of the neutron halo and is also related to the ^{11}Li ground state structure. The 1.3 MeV (l=1) excited state of ^{11}Li corresponds to a soft-dipole mode of excitation. In ^{8}He, with four extra-core neutrons, exotic shell sequences are expected. Some ambiguities also exist regarding soft-dipole excitation in He isotopes. Using a new set of forward angle data for ^{8}He inelastic scattering, we found that the 3.57 MeV excited state corresponds to l=2 transition, as is normally expected for an even-even nucleus. For ^{6}He inelastic scattering to the 1.8 MeV state, variation of the ^{6}He density distribution (rms radius 2.32-2.76 fm) resulted in negligible changes in calculations. Such microscopic studies of nuclei with severe imbalances between neutron and proton numbers are important with increasing availability of rare isotope beams and larger data set.

(c) Simulation

The Geant4 simulations for the TREX detector array

I carried out the Geant4 simulations at Bose Institute for our approved experiment IS554 at CERN-HIE-ISOLDE, using the Miniball-TREX detector array. The results carried out has been presented at the ISOLDE Workshop and Users Meeting 2015 at CERN. At present we are fine tuning the simulations.

Simulations for the MUST2 detector array

At the Institut de Physique Nucleaire in France, I developed a Monte Carlo simulation code for the MUST2 detector array. A test experiment with the array was carried out at GANIL to investigate the $2p$ pickup reaction ^{22}Ne(α,^{6}Be)^{20}O in inverse kinematics at E = 30 MeV/A, which produces $\alpha + p + p$ final state. The code simulates the response of three-body final state.

Simulations for the VECC charged particle detector array

I developed a simulation code to study the response of the charged particle detector array (CPDA) at VECC. The nuclear collisions events at intermediate energies were obtained from the phenomenological event generator HIPSE (heavy ion phase space exploration). The work shows that the probability of multiple hits in the reactions of interest are small implying high granularity of the array. The unique feature of the array is that it enables to carry out high precision multi particle correlation studies over a large solid angle.

(d) Instrumentation

Calibration of the polyethylene terephthalate (PET) passive detector at CERN

We studied the charge response of the polyethylene terephthalate (PET) passive detector at CERN. Beams of 2.82 MeV/u ^{129}Xe, ^{78}Kr and ^{49}Ti from the REX-ISOLDE facility at CERN were utilized. A calibration curve for PET is generated and our work clearly demonstrates that PET can be effectively used as a solid state nuclear track detector (SSNTD) with a high detection threshold. This makes this detector particularly suitable for rare event search in cosmic rays as it eliminates the dominant low Z background.

The charged particle detector array at VECC

For the utilization of the upcoming K500 superconducting cyclotron at VECC, Kolkata, a charged particle detector array (Si-CsI) is being built. The array has 24 (5 x 5 cm^2) telescopes, each with three elements, 50μ single sided Si strip, 500μ double sided Si strip with 3 mm strip pitch and 6 cm CsI(Tl).

Behind each 500μ strip, 4 CsI(Tl) detectors (2.5 x 2.5 cm^2) are placed. The target to detector distance is 20 cm. I was involved in the initial tests of the performance of some prototype array elements.

The gas-jet target and gas-recirculation system at TUNL

At TUNL, the analyzing power measurements required upgrading the gas-jet target and building an accompanying gas-recirculation system to clean and recompress the exhaust gas. This would allow long data acquisition times at reasonable cost. The system was designed and built, the gas lines were assembled and leak-tested. The programmable logic control unit and necessary software for the valve control and interlock logic were installed. The calibration of appropriate nozzle-catcher (for flow of H_2 at various pressures) was carried out. A new chamber setup was designed, built and installed to detect scattered particles at very forward angles.

(e) Skills

I have operated tandem accelerator, worked with polarized ion source, gas jet target, active target detector, Si (strip) CsI(Tl) detector arrays. I have substantial experience with nuclear electronics and data acquisition. My computer skills include working with Mac, LINUX, Windows and VMS operating systems. I am proficient in FORTRAN programming language, MS Office, σ-plot and LaTeX. I have extensively used codes and scientific packages like DWUCK4, ECIS, SRIM, LISE.

TEACHING

PhD coursework of Bose Institute (2014 - present): Methods in Physics (B17) (Coordinator)

Int. M.Sc-Ph.D Physics course of Bose Institute and Univ. of Calcutta (2014 - present) : Fall Semester
Nuclear Physics (full responsibility) : 30 hours

M. Sc. Physics Courses of St. Xavier's College and Bose Institute (2008 - 2014) : Fall Semester
1) Nuclear Physics (full responsibility) : 30 hours; 2) Advanced Experiments I.

Guide in Science Academies' (IASc-INSA-NASI) Summer Research Fellowship Program for Students and Teachers (2009 - present).

RESEARCH PUBLICATIONS

(a) Refereed International Journals[1]

Phys. Rev. Lett. (2)
Phys. Lett. B (1)
Phys. Rev. C (12) (Includes 2 Rapid Communications)
Jour. Phys. G: Nucl. Part. Phys. (3) (Includes 1 Letter to the Editor)
Eur. Phys. Jour. A (1)
Nucl. Phys. A (6)
Astroparticle Physics (1)
Nucl. Instr. Meth. A (2)
International Journal of Modern Physics E (1)
Acta Physica Polonica B (1)
Pramana - Jour. of Phys. (1)
Physica Scripta (1)

Study of resonance states of ^{11}Be with isospectral bound state microscopic potential
S. K. Dutta, **D. Gupta**, D. Das and Swapan K. Saha
Jour. Phys. G: Nucl. Part. Phys. 41, 095104 (2014) **Times Cited: 0**

Deformation in $^{28}Si^*$ produced via ^{16}O + ^{12}C reaction
S. Kundu, C. Bhattacharya, S. Bhattacharya, T. K. Rana, K. Banerjee, S. Muhkopadhayay, **D. Gupta**, A. Dey, and R. Saha
Phys. Rev. C 87, 024602 (2013) **Times Cited: 4**

Study of the 1p transfer channel in the ^{12}C + ^{27}Al reaction at 6-7 MeV per nucleon
A. Dey, S Kundu, T K Rana, K Banerjee, C Bhattacharya, M Biswas, T K Ghosh, H Pai, G Mukherjee, J K Meena, **D Gupta**, S Bhattacharya, S Mukhopadhyay, D Pandit, S R Banerjee, S. Kumar, A Chatterjee, K Ramachandran, K Mahata, S Santra and S Pandit
Phys. Scr. T150, 014011 (2012) **Times Cited: 1**

Onset of deformation at N = 112 in Bi nuclei
H. Pai, G. Mukherjee, R. Raut, S. K. Basu, A. Goswami, S. Chanda, T. Bhattacharjee, S. Bhattacharyya, C. Bhattacharya, S. Bhattacharya, S. R. Banerjee, S. Kundu, K. Banerjee, A. Dey, T. K. Rana, J. K. Meena, **D. Gupta**, S. Mukhopadhyay, Srijit Bhattacharya, Sudeb Bhattacharya, S. Ganguly, R. Kshetri, and M. K. Pradhan
Phys. Rev. C 85, 064317 (2012) **Times Cited: 6**

Complex-fragment emission in low-energy light-ion reactions
S. Kundu, C. Bhattacharya, K. Banerjee, T. K. Rana, S. Bhattacharya, A. Dey, T. K. Ghosh, G. Mukherjee, J. K. Meena, P. Mali, S. Mukhopadhyay, D. Pandit, H. Pai, S. R. Banerjee, **D. Gupta**, P. Banerjee, Suresh Kumar, A. Shrivastava, A. Chatterjee, K. Ramachandran, K. Mahata, S. K. Pandit, and S. Santra
Phys. Rev. C 85, 064607 (2012) **Times Cited: 3**

Calibration of a solid state nuclear track detector (SSNTD) with high detection threshold to search for rare events in cosmic rays

[1] **Citation Source: ISI Web of Science Core Collection (as of January 2017)**
Publications : 32, Sum of the Times Cited : 461, Sum of Times Cited without Self-Citations : 419
Average Citations per Item : 14.41, h-index : 11

S. Dey, **D. Gupta**, A. Maulik, Sibaji Raha, Swapan K. Saha, D. Syam, J. Pakarinen, D. Voulot, F. Wenander
Astroparticle Physics 34, 805 (2011)[2] **Times Cited: 7**

Pair and single neutron transfer with Borromean ^{8}He
A. Lemasson, A. Navin, M. Rejmund, N. Keeley, V. Zelevinsky, S. Bhattacharyya, A. Shrivastava, D. Bazin, D. Beaumel, Y. Blumenfeld, A. Chatterjee, **D. Gupta**, G. de France, B. Jacquot, M. Labiche, R. Lemmon, V. Nanal, J. Nyberg, R. G. Pillay, R. Raabe, K. Ramachandran, J. A. Scarpaci, C. Schmitt, C. Simenel, I. Stefan, and C. N. Timis
Phys. Lett. B 697, 454 (2011) **Times Cited: 25**

Reactions with the double-Borromean nucleus ^{8}He
A. Lemasson, A. Navin, N. Keeley, M. Rejmund, S. Bhattacharyya, A. Shrivastava, D. Bazin, D. Beaumel, Y. Blumenfeld, A. Chatterjee, **D. Gupta**, G. de France, B. Jacquot, M. Labiche, R. Lemmon, V. Nanal, J. Nyberg, R. G. Pillay, R. Raabe, K. Ramachandran, J. A. Scarpaci, C. Simenel, I. Stefan, and C. N. Timis
Phys. Rev. C 82, 044617 (2010) **Times Cited: 37**

Extreme nuclear shapes examined via giant dipole resonance lineshapes in hot light-mass systems
D. Pandit, S. Mukhopadhyay, S. Bhattacharya, S. Pal, A. De, S. Bhattacharya, C. Bhattacharya, K. Banerjee, S. Kundu, T. K. Rana, A. Dey, G. Mukherjee, T. Ghosh, **D. Gupta**, and S. R. Banerjee
Phys. Rev. C 81, 061302(R) (2010) **Times Cited: 23**

Study of the $^{20}O(d,t)$ reaction with the MUST2-TIARA-VAMOS-EXOGAM setup
A. Ramus, N. L. Achouri, H. Al Falou, N. I. Ashwood, D. Beaumel, Y. Blumenfeld, S. M. Brown, W. N. Catford, R. Chapman, M. Chartier, N. Curtis, F. Delaunay, B. Fernandez-Dominguez, C. Force, G. De France, S. Franchoo, J. Guillot, **D. Gupta**, P. Haigh, F. Hammache, M. Labiche, V. Lapoux, R. C. Lemmon, F. Marechal, B. Martin, X. Mougeot, B. Mouginot, L. Nalpas, A. Navin, N. A. Orr, N. Patterson, B. Pietras, E. C. Pollacco, A. Le Prince, M. Rejmund, J. A. Scarpaci, N. De Sereville, I. Stefan, O. Sorlin, J. S. Thomas and G. L. Wilson
International Journal of Modern Physics E 18, 2056 (2009) **Times Cited: 3**

Variation of neutron detection characteristics with dimension of BC501A neutron detector
K. Banerjee, T. K. Ghosh, S. Kundu, T. K. Rana, C. Bhattacharya, J. K. Meena, G. Mukherjee, P. Mali, **D. Gupta**, S. Mukhopadhyay, D. Pandit, S. R. Banerjee, S. Bhattacharya *et al*
Nucl. Instr. Meth. A 608, 440 (2009) **Times Cited: 31**

Light-charged-particle emission from hot $^{32}S^{*}$ formed in $^{20}Ne + ^{12}C$ reaction
A. Dey, S. Bhattacharya, C. Bhattacharya, K. Banerjee, T.K. Rana, S. Kundu, S. R. Banerjee, S. Mukhopadhyay, **D. Gupta**, R. Saha
Eur. Phys. Jour. A 41, 39 (2009) **Times Cited: 0**

Fragment emission studies of the $^{16}O + ^{12}C$ reaction
S. Kundu, A. Dey, K. Banerjee, T. K. Rana, S. Mukhopadhyay, **D. Gupta**, R. Saha, S. Bhattacharya, C. Bhattacharya
Phys. Rev. C 78, 044601 (2008) **Times Cited: 8**

Consistency of nuclear thermometric measurements at moderate excitation
T. K. Rana, C. Bhattacharya, S. Kundu, K. Banerjee, S. Bhattacharya, A. Dey, T. K. Ghosh,

[2] **Research Highlight in Nature India, doi:10.1038/nindia.2011.56**

G. Mukherjee, J. K. Meena, **D. Gupta**, S. Mukhopadhyay, D. Pandit, S. R. Banerjee, A. Roy, and P. Dhara
Phys. Rev. C 78, 027602 (2008) **Times Cited: 7**

1n and 2n Transfer With the Borromean Nucleus ^{6}He Near the Coulomb Barrier[3]
A. Chatterjee, A. Navin, A. Shrivastava, S. Bhattacharyya, M. Rejmund, N. Keeley, V. Nanal, J. Nyberg, R. G. Pillay, K. Ramachandran, I. Stefan, D. Bazin, D. Beaumel, Y. Blumenfeld, G. de France, **D. Gupta**, M. Labiche, A. Lemasson, R. Lemmon, R. Raabe, J. A. Scarpaci, C. Simenel, and C. Timis
Phys. Rev. Lett. 101, 032701 (2008) **Times Cited: 83**

Giant dipole resonance width in nuclei near Sn at low temperature and high angular momentum
S. Bhattacharya, S. Mukhopadhyay, D. Pandit, S. Pal, A. De, S. Bhattacharya, C. Bhattacharya, K. Banerjee, S. Kundu, T. K. Rana, A. Dey, G. Mukherjee, T. Ghosh, **D. Gupta** and S. R. Banerjee
Phys. Rev. C 77, 024318 (2008) **Times Cited: 18**

First Measurement of the Giant Monopole and Quadrupole Resonances in a Short-Lived Nucleus: ^{56}Ni
C. Monrozeau, E. Khan, Y. Blumenfeld, C. E. Demonchy, W. Mittig, P. Roussel-Chomaz, D. Beaumel, M. Caamano, D. Cortina-Gil, J. P. Ebran, N. Frascaria, U. Garg, M. Gelin, A. Gillibert, **D. Gupta**, N. Keeley, F. Marechal, A. Obertelli and J-A. Scarpaci
Phys. Rev. Lett. 100, 042501 (2008) **Times Cited: 42**

Characteristics of Gd-loaded liquid scintillators BC521 and BC525
K. Banerjee, S. Kundu, S. Mukhopadhyay, T. K. Rana, S. Bhattacharya, C. Bhattacharya, S. R. Banerjee, T. K. Ghosh, G. Mukherjee, T. Bandyopadhyay, A. Dey, J. K. Meena, P. Mukhopadhyay, **D. Gupta**, S. Pal, D. Pandit, S. Bhattacharya
Nucl. Instr. Meth. A 580, 1383 (2007) **Times Cited: 10**

Characterization of fragment emission in ^{20}Ne ($\sim$ 7-10 MeV/nucleon) + ^{12}C reactions
A. Dey, C. Bhattacharya, S. Bhattacharya, S. Kundu, K. Banerjee, S. Mukhopadhyay, **D. Gupta**, T. Bhattacharjee, S. R. Banerjee, *et al*
Phys. Rev. C 76, 034608 (2007) **Times Cited: 11**

Study of Dissipative Collisions of ^{20}Ne ($\sim$ 7-11 MeV/nucleon) + ^{27}Al
A. Dey, C. Bhattacharya, S. Bhattacharya, T. K. Rana, S. Kundu, K. Banerjee, S. Mukhopadhyay, S. R. Banerjee, **D. Gupta**, R. Saha
Phys. Rev. C 75, 064606 (2007) **Times Cited: 4**

Measurement of the GMR in the unstable ^{56}Ni nucleus using the active target MAYA
C. Monrozeau, E. Khan, Y. Blumenfeld, W. Mittig, D. Beaumel, M. Caamano, D. Cortina-Gil, C. E. Demonchy, N. Frascaria, U. Garg, M. Gelin, A. Gillibert, **D. Gupta**, F. Marechal *et al*
Nucl. Phys. A 788, 182c (2007) **Times Cited: 8**

Evidence of large nuclear deformation of $^{32}S^{*}$ formed in ^{20}Ne + ^{12}C reaction
A. Dey, S. Bhattacharya, C. Bhattacharya, K. Banerjee, T. K. Rana, S. Kundu, S. Mukhopadhyay, **D. Gupta**, R. Saha
Phys. Rev. C 74, 044605 (2006) **Times Cited: 10**

Folding model analysis of proton scattering from $^{18,20,22}O$ nuclei

[3] **Phys. Rev. Lett. Cover Page Article**

D. Gupta, E. Khan, Y. Blumenfeld
Nucl. Phys. A 773, 230 (2006) **Times Cited: 13**

Survival of orbiting in ^{20}Ne (7-10 MeV/nucleon) + ^{12}C reactions
C. Bhattacharya, A. Dey, S. Kundu, K. Banerjee, S. Bhattacharya, S. Mukhopadhyay, **D. Gupta**, T. Bhattacharjee, S. R. Banerjee *et al*
Phys. Rev. C 72, 021601 (R) (2005) **Times Cited: 17**

Folding model analysis of proton scattering from mirror nuclei ^{18}Ne and ^{18}O
D. Gupta, D. N. Basu
Nucl. Phys. A 748, 402 (2005) **Times Cited: 22**

Inelastic scattering of protons from $^{6,8}He$ and $^{7,11}Li$ in a folding model approach
D. Gupta, C. Samanta
Jour. Phys. G: Nucl. Part. Phys. 28, 85 (2002) [4] **Times Cited: 10**

Breakup of 42 MeV ^{7}Li projectiles in the fields of ^{12}C and ^{197}Au nuclei
D. Gupta, C. Samanta, R. Kanungo, P. Basu, Subinit Roy, S. Kailas, A. Chatterjee *et al*
Pramana - Jour. of Phys. 57, 209 (2001) **Times Cited: 0**

Measurement of 42 MeV ^{7}Li projectile breakup on ^{208}Pb target near grazing incidence
D. Gupta, C. Samanta, A. Chatterjee, S. Kailas, B. J. Roy, K. Mahata, A. Shrivastava
Nucl. Phys. A 683, 3 (2001) [5] **Times Cited: 8**

Consistent analysis of proton elastic scattering from $^{4,6,8}He$ and $^{6,7,9,11}Li$ in the energy range of 25 - 75A MeV
D. Gupta, C. Samanta, R. Kanungo
Nucl. Phys. A 674, 77 (2000) **Times Cited: 37**

Channel coupling effects in resonant breakup of 42 MeV ^{7}Li with ^{58}Ni target
D. Gupta, C. Samanta, A. Chatterjee, K. Rusek, Y. Hirabayashi
Jour. Phys. G: Nucl. Part. Phys. 26, L81 (2000) **Times Cited: 2**

Effect of smeared ^{4}He-core in ^{6}He + p elastic scattering
D. Gupta, C. Samanta, R. Kanungo
Acta Physica Polonica B 31, 471 (2000) **Times Cited: 1**

Measurement of 42 MeV ^{7}Li projectile breakup on ^{58}Ni target beyond grazing incidence
D. Gupta, C. Samanta, R. Kanungo, M. Sharan, S. Kailas, A. Chatterjee, K. Mahata, A. Shrivastava
Nucl. Phys. A 646, 161 (1999) **Times Cited: 10**

(b) Selected Conference Proceedings

Study of unbound states of ^{15}Be using supersymmetric quantum mechanics
S. K. Dutta, **D. Gupta**, Swapan K. Saha
Proceedings of the DAE-BRNS Symposium on Nuclear Physics 61, 80 (2016)

Resonance excitation in ^{7}Be + d reaction to study the cosmological lithium problem

[4] **Among the most highly accessed online articles in Jour. Phys. G during 1999-2002**
[5] **Feature in the hottest papers page, amongst the most downloaded papers (June - December 2000)**

M. Sinha, **D. Gupta**, Swapan K. Saha
Proceedings of the DAE-BRNS Symposium on Nuclear Physics 61, 886 (2016) [6]

Dissipative collision studies in ^{11}B + ^{28}Si, ^{12}C + ^{27}Al, ^{12}C + ^{28}Si
S. Kundu, C. Bhattacharya, T. K. Rana, K. Banerjee, A. Dey, T. K. Ghosh, G. Mukherjee, S. Bhattacharya, J. K. Meena, S. R. Banerjee, S. Mukhopadhyay, D. Pandit, P. Mali, **D. Gupta**, A. Shrivastava, S. Kumar, A. Chatterjee, K. Ramachandran, P. Banerjee
Proceedings of the DAE-BRNS Symposium on Nuclear Physics vol 56, 486 (2011)

Deformation in ^{28}Si produced via ^{16}O + ^{12}C reaction*
S. Kundu, C. Bhattacharya, T. K. Rana, K. Banerjee, S. Mukhopadhyay, **D. Gupta**, A. Dey, R. Saha, S. Bhattacharya
Proceedings of the DAE-BRNS Symposium on Nuclear Physics vol 56, 562 (2011)

Fragment emission studies in ^{12}C + ^{12}C reaction
S. Kundu, C. Bhattacharya, T. K. Rana, K. Banerjee, T. K. Ghosh, G. Mukherjee, A. Dey, S. Bhattacharya, J. K. Meena, S. Mukhopadyay, **D. Gupta**, Suresh Kumar, S. K. Pandit, S. Santra, K. Mahata, A. Chatterjee, K. Ramachandran
Proceedings of the DAE-BRNS Symposium on Nuclear Physics vol 55, 326 (2010)

Simulations for The Charged Particle Detector Array at VECC
D. Gupta, S. Bhattacharya, G. Mukherjee, C. Bhattacharya, K. Banerjee, A. Dey *et al*
Proceedings of the DAE-BRNS Symposium on Nuclear Physics vol 53, 701 (2008)

Simulations for The VECC Charged Particle Detector Array
D. Gupta, S. Bhattacharya, G. Mukherjee, C. Bhattacharya, K. Banerjee, A. Dey *et al*
Intl Wkshop on Multifragmentation and Related Topics, Caen (France) November 4-7, 2007
Italian Physical Society, Conference Proceedings 95, 321 (2008)

A Gas-jet Recirculation System for p-p Scattering Analyzing Power Measurements at $E \leq 10$ MeV
D. Gupta, T. C. Black, E. J. Ludwig, H. J. Karwowski
17th Intl IUPAP Conf on Few-Body Problems in Physics, TUNL, Durham, USA, June 5-10 (2003)

Proton-^3He Elastic scattering at low Energies and the A_y Puzzle
B. M. Fisher, T. C. Black, C. R. Brune, T. B. Clegg, **D. Gupta**, T. Katabuchi, H. J. Karwowski, D. S. Leonard, E. J. Ludwig, A. Kievsky, M. Viviani, S. Rosati
17th Intl IUPAP Conf on Few-Body Problems in Physics, TUNL, Durham, USA, June 5-10 (2003)

Measurement of the vector analyzing power A_y for $p + p$ elastic scattering at low energy
D. Gupta, T. C. Black, E. J. Ludwig, H. J. Karwowski
TUNL Progress Report XLI, 126 (2002)

Signature of channel coupling effect in proton elastic scattering from $^{4,6,8}He$ and $^{6,7,9,11}Li$ in the energy range of 25A-70A MeV
C. Samanta, **D. Gupta**, R. Kanungo
Bulletin of American Physical Society, April Meeting, P14.009 (2000)

Breakup of 42 MeV ^7Li-projectile on ^{58}Ni target
D. Gupta
University of Helsinki Report Series in Physics HU-P-263, 39 (1999)

[6] **Awarded as best poster presentation in the 61st DAE-BRNS Symposium on Nuclear Physics 2016**

TALKS DELIVERED & VISITS FOR COLLABORATIVE RESEARCH

Visited CERN, Geneva, Switzerland
September 25 - October 5, 2016; December 1-9, 2015; December 14-18, 2014; December 16-21, 2012

Visited Institut de Physique Nucleaire, Orsay, France
September 21-25, 2016; December 9-17, 2015; December 8-14, 2014; December 13-16, 21-28, 2012

Visited GANIL, Caen, France
April 12-17, 2014

The cosmological lithium problem in the context of resonant enhancement (poster)
ISOLDE Workshop and Users Meeting 2015
CERN, Geneva, Switzerland, December 2-4, 2015

Breakup and transfer reactions with ^{7}Be to study ^{7}Li abundance anomaly (poster)
ISOLDE Workshop and Users Meeting 2014 "50th Anniversary Edition",
CERN, Geneva, Switzerland, December 17-19, 2014

Nuclear Exotica with Rare Isotope Beams
Bose Institute, Kolkata, India, August 20, 2014

Resonance excitation in ^{7}Be + d reaction to study ^{7}Li abundance anomaly
ISOLDE Workshop and Users Meeting 2012, CERN, Geneva, Switzerland, December 17-19, 2012

Nuclear Astrophysics with Rare Isotope Beams at CERN-ISOLDE
Institut de Physique Nucleaire, Orsay, France, December 14, 2012

Astrophysical S-factor from nuclear reactions with a rare isotope beam of ^{7}Be
ISRO Respond Review Meeting, Physical Research Laboratory, Ahmedabad, February 28-29, 2012

Interaction of Radiation with Matter
Winter School on Astroparticle Physics, Bose Institute, Darjeeling, Dec 21-29, 2015
Winter School on Astroparticle Physics, Bose Institute, Darjeeling, Dec 20-28, 2013
Winter School on Astroparticle Physics, Bose Institute, Darjeeling, Dec 21-29, 2011
Winter School on Astroparticle Physics, Bose Institute, Darjeeling, Dec 10-22, 2009

Exotica in Nuclear Physics Experiments and Cosmic Rays
Bose Institute, Kolkata, India, April 24, 2009

Study of Nuclear Reactions with Rare Isotope Beams
Gesellschaft fur Schwerionenforschung mbH (GSI), Darmstadt, Germany, October 25, 2007
Nuclear Science Centre, New Delhi, India, September 11, 2007
Saha Institute of Nuclear Physics, Kolkata, India, August 21, 2007
Variable Energy Cyclotron Centre, Kolkata, India, July 24, 2007
Bose Institute, Kolkata, India, July 20, 2007
Hahn-Meitner-Institut, Berlin, Germany, December 4, 2006
Forschungszentrum Rossendorf, Dresden, Germany, November 30, 2006

Measurement of p-p Scattering Analyzing Power at Low Energy
Seminar Ions Lourds, Institut de Physique Nucleaire, Orsay, France, February 2, 2005
Nuclear Science Centre, New Delhi, India, October 9, 2004
Variable Energy Cyclotron Centre, Calcutta, India, April 7, 2004
Duke University, Durham, USA, January 22, 2004
Dept. of Physics & Astronomy, Univ. of North Carolina, Chapel Hill, USA, November 17, 2003

Dept. of Physics, Argonne National Laboratory, Argonne, USA, October 10, 2003

Scattering of Protons from $^{4,6,8}He$, $^{6,7,9,11}Li$ in a Folding Model Approach
Second RIA Summer School on Exotic Beam Physics
NSCL, Michigan State University, East Lansing, USA, August 4-9, 2003

Breakup of 42 MeV ^{7}Li projectiles
Dept. of Physics & Astronomy, Univ. of North Carolina, Chapel Hill, USA, September 17, 2001

Breakup of 42 MeV ^{7}Li projectiles with ^{12}C, ^{58}Ni, ^{197}Au and ^{208}Pb targets
The 18th IPS Colloquium for Young Physicists, SINP, Calcutta, India, August 24-25, 2000

Discrepancy between ^{11}Li + p and ^{6}He + p scattering
DAE Symposium on Nuclear Physics, Chandigarh, India, December 27-31, 1999

Breakup of 42 MeV ^{7}Li projectile on ^{58}Ni target
Department of Physics, University of Surrey, UK, September 16, 1999

Effect of smeared ^{4}He-core in ^{6}He + p elastic scattering
XXVI Mazurian Lakes School of Physics Krzyze, Poland September 1-11, 1999

Visited Forschungszentrum Karlsruhe, Technik und Umwelt,
Institute fur Kernphysik III, Germany, August 23-30, 1999

Breakup of 42 MeV ^{7}Li projectile on ^{58}Ni target
ICPS '99, University of Helsinki, Helsinki, Finland, August 14-20, 1999

Breakup of 42 MeV ^{7}Li projectile on ^{58}Ni target
Van-de-Graaff Seminar, NPD, Bhabha Atomic Research Centre, Mumbai, India, May 7, 1999

Breakup of ^{7}Li on ^{58}Ni nuclei
Saha Institute of Nuclear Physics, NRS Division, Calcutta, India April 9 and 16, 1999

A study of light exotic nuclei near drip line
Saha Institute of Nuclear Physics, Calcutta, India, August 1996

CONFERENCE/WORKSHOP/SYMPOSIUM/SCHOOLS ATTENDED

Workshop and Winter School on Astroparticle Physics, Bose Institute, Darjeeling, Dec 17-29, 2015
ISOLDE Workshop and Users Meeting 2015, CERN, Geneva, Switzerland, December 2-4, 2015
ISOLDE Workshop and Users Meeting 2014, CERN, Geneva, Switzerland, December 15-17, 2014
Workshop and Winter School on Astroparticle Physics, Bose Institute, Darjeeling, Dec 17-28, 2013
ISOLDE Workshop and Users Meeting 2012, CERN, Geneva, Switzerland, December 17-19, 2012
4^{th} School & Workshop on Low Energy Nuclear Astrophysics, SINP, Kolkata, November 26-29, 2012
Workshop on Science with Rare Ion Beams (SCRIBE-2012), VECC, Kolkata, November 7-9, 2012
NUSTAR Week 2012, Variable Energy Cyclotron Centre, Kolkata, October 8-12, 2012
Intl Wkshop on Future Plan with Radioactive Ion Beam (FPRIB 2012), Kolkata, April 16-18, 2012
ISRO Respond Review Meeting, Physical Research Laboratory, Ahmedabad, February 28-29, 2012
Workshop and Winter School on Astroparticle Physics, Bose Institute, Darjeeling, Dec 17-29, 2011
CAEN Digital Pulse Processing Workshop, Bose Institute, Kolkata, February 23-24, 2011
Workshop and Winter School on Astroparticle Physics, Bose Institute, Darjeeling, Dec 10-22, 2009
Homi Bhabha Centenary Wshop and Winter School on Astroparticle Physics, Ooty, Dec 18-29, 2008
Cyclotrons : Rising Expectations and Mounting Challenges, VECC, Kolkata, June 25-26, 2008
Intl Wkshop on Multifragmentation and Related Topics, GANIL, Caen, France, November 4-7, 2007
Fourth Nuclear Theory Workshop "Clusters in Nuclei", IReS, Strasbourg, France, Feb 7-11, 2005
Workshop on Nuclear Astrophysics using Low Energy Accelerators, SINP, Calcutta, April 29, 2004
Second RIA Summer School on Exotic Beam Physics, NSCL, East Lansing, USA, August 4-9, 2003
17th Intl IUPAP Conf on Few-Body Problems in Physics, TUNL, Durham, USA, June 5-10, 2003
Science and History on Stage: A Raleigh Symposium on Copenhagen, Raleigh, USA, March 16, 2002
Production of Radioactive Ion Beams (PRORIB 2001), Puri, India, February 11-17, 2001
International Symposium on Nuclear Physics: Mumbai, India, December 21-24, 2000
Physics with Multi Detector Array 2000, SINP, Calcutta, India, November 8-10, 2000
DAE Symposium on Nuclear Physics, Chandigarh, India, December 27-31, 1999
XXVI Mazurian Lakes School of Physics, Krzyze, Poland, September 1-11, 1999
Intl. Conf. of Phys. Students (ICPS 1999), Univ. of Helsinki, Finland, August 14-20, 1999
DAE Symposium on Nuclear Physics, Mumbai, India, December 26-30, 1998
Conference on Physics & Technology of Accelerators, Calcutta, India, 1998
Intl. Wkshop. on Physics with Radioactive Nuclear Beams, Puri, India, Jan 12-17, 1998
DAE Symposium on Nuclear Physics, Bangalore, India, December 26-30, 1997

PROFESSIONAL SERVICES & ACTIVITIES

Administrative Services

Served in the election commission 2013 for election to the various committees of the academic council of Bose Institute
Served in the committees for recruiting JRF/MSc students at Bose Institute (2009 - present)

Conference Organization

Convener of the Workshop and Winter School on Astroparticle Physics (WAPP 2009), Bose Institute, Darjeeling, December 10-22, 2009

Member of the organizing committee for the Workshop and Winter School on Astroparticle Physics (WAPP 2011, WAPP 2013, WAPP 2015), Bose Institute, Darjeeling

Membership of Academic Organizations

Life Member of The Indian Physical Society

ADVISEMENT

Postdoc

Dr. Mandira Sinha, ISRO-RA (joined 2015)

PhD

1. *Mr. Mustak Ali, JRF (joined 2016)*
2. *Ms. Kabita Kundalia, JRF (joined 2016)*
   (Joint supervision with Prof. Swapan K. Saha)
3. *Mr. Kaushik Naskar, CSIR-JRF (joined 2016)*
   (Joint supervision with Prof. Partha Joardar)
4. *Ms. Dyutima Das, CSIR-SRF (joined 2012)*
   Thesis title: Structure and reaction dynamics of exotic Beryllium nuclei

Masters

1. *Mr. Abhijit Bera, INSPIRE scholar, DST, Govt. of India (2016); Next: MSc Physics (IISER Kolkata)*
2. *Ms. Anwesha Panda, INSPIRE scholar, DST, Govt. of India (2016); Next: MSc Physics (IISER Kolkata)*
3. *Mr. G Gurunadha Reddy, INSPIRE scholar, DST, Govt. of India (2016); Next: MSc Physics (NISER Bhubaneswar)*
4. *Ms. Ankita Nemu, IASc-INSA-NASI Summer Research Fellow (2016); Next: MSc Physics*
5. *Ms. K. R. Athira, IASc-INSA-NASI Summer Research Fellow (2016); Next: MSc Physics*
6. *Mr. Sharba Bhattacharjee, IASc-INSA-NASI Summer Research Fellow (2015); Next: MSc Physics (NISER Bhubaneswar)*
7. *Mr. Anurag Singh, INSPIRE scholar, DST, Govt. of India (2015); Next: MSc Physics (Visva-Bharati University)*
8. *Ms. Debasmita Mondal, IASc-INSA-NASI Summer Research Fellow (2014); Next: MSc Physics (IISc Bangalore)*
9. *Mr. Anshul Singh, IASc-INSA-NASI Summer Research Fellow (2012); Next: MSc Physics (U. Delhi)*
10. *Ms. A. S. Ashwini, IASc-INSA-NASI Summer Research Fellow (2012); Next: B. Tech (Sastra Univ.)*
11. *Mr. Nabarun Dev, IASc-INSA-NASI Summer Research Fellow (2011); Next: MSc Physics (IIT Delhi); Graduate student, Univ. of Notre Dame, Indiana, USA*
12. *Ms. Pew Basu, INSPIRE scholar, DST, Govt. of India (2010); Next: MSc Physics (Univ. of Calcutta)*