

CURRICULUM VITAE

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Present Position :

Assistant Professor in the Department of Physics, IIT - Roorkee, since July 27, 2008.

Research Experience :

- Ph.D. Research Fellow at Saha Institute of Nuclear Physics from August 1998 to January 2004, under the supervision of Prof. Radhey Shyam. Thesis submitted on February 17, 2003 and defended on October 17, 2003.
- Post-Doc in Grand Accélérateur National d'Ions Lourds (GANIL), Caen, France, from January 15, 2004 to January 14, 2006, in the group of Prof. Marek Płoszajczak.
- Visiting Fellow in the Theory division of Saha Institute of Nuclear Physics from January 16 to March 13, 2006 and in the Department of Physics, University of Padova from March 14 to March 31, 2006.
- Post-Doc in the Department of Physics, University of Padova from April 01, 2006 to September 30, 2007, in the group of Prof. Andrea Vitturi.
- Visiting Scientist in the Theory division of Saha Institute of Nuclear Physics from October 03, 2007 to December 31, 2007.
- Post-Doc in the Physique Nucléaire Théorique et Physique Mathématique group of Prof. D. Baye and Prof. P. Descouvemont in Université Libre de Bruxelles from January 01, 2008 to June 30, 2008.

Educational qualifications :

- **1990** : In 1990 passed Indian Certificate of Secondary Education exam (ICSE, class 10) conducted by the Council for the Indian School Certificate Examination, New Delhi, with 84.83% (overall). Science and Mathematics aggregate = 94.50%

1990 - 1992 : In 1992 passed Indian School Certificate exam (ISC, class 12) conducted by the Council for the Indian School Certificate Examination, New Delhi, with 79.60% (overall). Physics, Chemistry and Mathematics aggregate = 83.67%

1992 - 1995 : In 1995 received B.Sc. with first class Honours in Physics from the University of Calcutta.

1995 - 1997 : In 1997 received M.Sc. with first class in Physics specializing in Nuclear Physics from the University of Calcutta.

1997 - 1998 : Post-M.Sc. associateship course at the Saha Institute of Nuclear Physics, Kolkata. Worked on project entitled “*Electromagnetic dissociation of halo nuclei*”.

1998 - 2004 : Ph.D. Research Fellow at Saha Institute of Nuclear Physics, Kolkata, in the Theory division from August 1998 onwards, under Prof. Radhey Shyam’s supervision and was awarded Ph.D. degree by Jadavpur University for thesis entitled “*Fragmentation of light drip line nuclei*”.

Research Interests - Keywords :

Theoretical Nuclear Physics: Nuclear Structure and Reaction theories, Nuclear Astrophysics, Radiative capture reactions, Electromagnetic dissociation, Coupled discretised-continuum channels calculations, Shell Model and Unified theories of nuclear structure and nuclear reactions, Halo nuclei, Two-proton radioactivity.

Teaching Experience :

Autumn semester: 2008 (since August – December, 2008)

Introductory electromagnetic theory and quantum theory to first year B.Tech students. Classical Mechanics to first year M.Sc and Pre-Ph.D. students. Laboratory work for first year B.Tech students.

Spring semester : 2009 (since January – present, 2009)

Advanced Nuclear Physics to final year M.Sc students. Classical Mechanics and Mathematical Physics to Pre-Ph.D. students. Laboratory work for first year B.Tech students and Introductory Physics to Preparatory Course students.

Tutor for the course on “Nuclear Reactions” at the SERC (“Science and Engineering Research Council”) School on Nuclear Physics with Radioactive Ion Beams, held at Panjab University, Chandigarh, and also to the course on ‘Symmetries in Nuclei’ at the third DST SERC school in Nuclear Physics held at the Inter University Accelerator Centre, New Delhi.

Computational Experience :

Extensive computational experience with FORTRAN having developed codes for several reaction observables. Experienced in working with C++.

Papers in Refereed Journals:

1. Electric and magnetic response to the continuum for $A = 7$ isotopes in a dicluster model
A. Mason, R. Chatterjee, L. Fortunato and A. Vitturi
Eur. Phys. J. A **39** (2009) 107
2. Rate of the ${}^8\text{Li}(n,\gamma){}^9\text{Li}$ reaction from the Coulomb dissociation of ${}^9\text{Li}$
P. Banerjee, R. Chatterjee and R. Shyam
Phys. Rev. C **78** (2008) 035804, nucl-th/0804.2065
3. Role of higher multipole excitations in the electromagnetic dissociation of one-neutron halo nuclei
R. Chatterjee, L. Fortunato and A. Vitturi
Eur. Phys. J. A **35** (2008) 213, nucl-th/0712.3330
4. Beam energy dependence of Coulomb-nuclear interference in the breakup of ${}^{11}\text{Be}$
R. Chatterjee
Phys. Rev. C **75** (2007) 064604, nucl-th/0703083
5. Description of the ${}^{17}\text{F}(p,\gamma){}^{18}\text{Ne}$ radiative capture reaction in the continuum shell model
R. Chatterjee, J. Okołowicz and M. Płoszajczak
Nucl. Phys. A **764** (2006) 528, nucl-th/0509026
6. Microscopic Theory of the Two-Proton Radioactivity
J. Rotureau, R. Chatterjee, J. Okołowicz and M. Płoszajczak
Eur. Phys. J. A **25s01** (2005) 173, DOI:10.1140/epjad/i2005-06-121-2
7. Full quantal theory of one-neutron halo breakup reactions
R. Chatterjee
Phys. Rev. C **68** (2003) 044604, nucl-th/0307033
8. Coulomb-nuclear interference in the breakup of ${}^{11}\text{Be}$
R. Chatterjee and R. Shyam
Phys. Rev. C **66** (2002) 061601(R), nucl-th/0211042
9. Spectroscopy of one-neutron halo nuclei from the Coulomb breakup reactions
R. Shyam and R. Chatterjee
Indian J. Phys., **76S**(1) (2002) 79, nucl-th/0104069

10. Four-body DWBA calculations of the Coulomb breakup of ${}^6\text{He}$
R. Chatterjee, P. Banerjee and R. Shyam
Nucl. Phys. A **692** (2001) 476, nucl-th/0101030
11. Structure of the exotic nucleus ${}^{14}\text{B}$ in the ground state
R. Chatterjee and P. Banerjee
Phys. Rev. C **63** (2001) 017303, nucl-th/0009045
12. Projectile structure effects in the Coulomb breakup of one-neutron halo nuclei
R. Chatterjee, P. Banerjee and R. Shyam
Nucl. Phys. A **675** (2000) 477, nucl-th/0003040

Papers presented at Symposia and Workshops:

1. Coulomb dissociation of ${}^9\text{Li}$ and the rate of the ${}^8\text{Li}(n,\gamma){}^9\text{Li}$ reaction
P. Banerjee, R. Chatterjee and R. Shyam
Proc. DAE Symposium on Nuclear Physics, INDIA, 53 (2008) 641.
2. All order Coulomb breakup of ${}^{15}\text{C}$ and application to the ${}^{14}\text{C}(n,\gamma){}^{15}\text{C}$ reaction
P. Banerjee, R. Chatterjee and R. Shyam
Proc. DAE Symposium on Nuclear Physics, INDIA, 53 (2008) 661.
3. Coulomb breakup of ${}^{23}\text{O}$.
P. Banerjee, R. Chatterjee and R. Shyam
Proc. DAE Symposium on Nuclear Physics, INDIA, 52 (2007) 446.
4. Momentum Space post form distorted wave calculations of one-neutron halo nuclei.
P. Banerjee, R. Chatterjee and R. Shyam
Proc. DAE Symposium on Nuclear Physics, INDIA, 51 (2006) 471.
5. The continuum shell model description of the ${}^{17}\text{F}(p,\gamma){}^{18}\text{Ne}$ radiative capture reaction
R. Chatterjee, J. Okołowicz and M. Płoszajczak
Proc. Int. 50th DAE Symposium on Nuclear Physics, INDIA, 50 (2005) 73.
6. Description of the two-proton radioactivity in a microscopic continuum shell model.
J. Rotureau, R. Chatterjee, J. Okołowicz and M. Płoszajczak
Proc. Int. 50th DAE Symposium on Nuclear Physics, INDIA, 50 (2005) 288.

7. Breakup reactions of dripline nuclei.
R. Shyam and R. Chatterjee
Published in 'Nuclei at the extremes of isospin and mass' page 147, Editors:
A. Ansari and R.K. Choudhury, Publisher: Narosa Publishing House Pvt. Ltd.
(2005); also at nucl-th/0310049
8. Spectroscopy of neutron drip line nuclei from the breakup reactions
R. Shyam and R. Chatterjee
Proc. National Symposium on Nuclear Models, Aug. 24-25, 2002, Visakhapatnam,
INDIA, page 59, Editor: V. K. B. Kota.
9. Spectroscopy of one-neutron halo nuclei from $A(a,b \gamma)$ type of reactions
R. Chatterjee and R. Shyam
Proc. DAE Symposium on Nuclear Physics, INDIA, 44B (2001) 248.
10. DWBA calculation of the Coulomb breakup of ${}^6\text{He}$ with a three-body wave-
function
R. Chatterjee, P. Banerjee and R. Shyam
Proc. Int. DAE Symposium on Nuclear Physics, INDIA, 43B (2000) 319.
11. Is there a one-neutron halo structure in ${}^{14}\text{B}$?
R. Chatterjee, P. Banerjee, R. Shyam
Proc. Int. DAE Symposium on Nuclear Physics, INDIA, 43B (2000) 321.
12. Finite range effects in the DWBA calculations of the Coulomb breakup of one-
neutron halo nuclei
R. Chatterjee, P. Banerjee and R. Shyam
Proc. DAE Symposium on Nuclear Physics, INDIA, 42B (1999) 232.

Invited talks in Conferences/Workshops/Schools :

1. "Direct and indirect approaches in nuclear astrophysics"
at the orientation course on "Exotic Radioactive Decay and Shell Model", Dept.
of Physics, IIT-Roorkee, on 21st December, 2008.
2. "The continuum shell model description of the ${}^{17}\text{F}(p,\gamma){}^{18}\text{Ne}$ radiative capture
reaction"
 - at the workshop on Advanced Many-Body Methods for Nuclear Physics,
ECT*, Trento, Italy, on July 6, 2007.
 - at the Workshop and School on low energy Nuclear Astrophysics, Saha Inst.,
Kolkata, on January 19, 2006,
 - at the 50th DAE-BRNS Symposium on Nuclear Physics, Bhabha Atomic Re-
search Center (BARC), Mumbai, India, on December 13, 2005.

3. “Coulomb breakup of Exotic Nuclei”
at the Workshop on Physics of Hadrons and Nuclei, Saha Inst., Kolkata, on March 31, 2000.
4. “Projectile structure effects in the Coulomb breakup of neutron rich halo nuclei”
at the 3rd National Workshop on Nuclear Reactions, Sambalpur University, on March 15, 2000.

Seminars given :

1. “Indirect methods for nuclear astrophysics”
TPSC seminar at the Department of Physics, Panjab University, Chandigarh on March 19, 2009.
2. “Coulomb dissociation of ${}^9\text{Li}$ and the rate of the ${}^8\text{Li}(n,\gamma){}^9\text{Li}$ reaction”
at the 53rd DAE-BRNS Symposium on Nuclear Physics, IIT-Roorkee, on December 23, 2008.
3. “Coulomb dissociation as an indirect method in nuclear astrophysics”
 - at the Saha Inst. of Nuclear Physics, on January 4, 2008,
 - at the IAP Belgian Research Initiative on eXotic nuclei (BRIX) meeting, on April 9, 2008, Belgian Nuclear Research Centre, Mol, Belgium.
4. “A shell model embedded in the continuum description of the ${}^{17}\text{F}(p,\gamma){}^{18}\text{Ne}$ radiative capture reaction”
at the Université Libre de Bruxelles, Brussels, on December 11, 2006.
5. “Direct and Indirect methods in Nuclear Astrophysics”
at the Institute of Physics, Bhubaneswar, on October 17, 2006.
6. “The continuum shell model description of the ${}^{17}\text{F}(p,\gamma){}^{18}\text{Ne}$ radiative capture reaction”
 - TPSC seminar at the Physical Research Institute, Ahmedabad on February 28, 2006,
 - at the Department of Physics, Indian Institute of Technology, Roorkee on January 16, 2006,
 - at the Variable Energy Cyclotron Centre, Kolkata on December 27, 2005,
 - at the Institute of Physics, Bhubaneswar, on December 20, 2005,
 - at the Saha Inst. of Nuclear Physics, on December 5, 2005.
7. “Description of the Coulomb and Nuclear breakup of halo nuclei”
at the Institute of Physics, Bhubaneswar, on December 23, 2005
8. “The radiative capture reaction ${}^{17}\text{F}(p,\gamma){}^{18}\text{Ne}$ and nova nucleosynthesis”
at the University of York, UK, on November 3, 2005.
9. “Coulomb and nuclear breakup of one-neutron halo nuclei”
at GANIL, Caen, France on April 23, 2004.
10. “A full quantum theory of one-neutron halo breakup reactions”
in 2nd RIA Summer School on Exotic beam Physics, NSCL, Michigan State University, USA, on August 4, 2003.

11. “Coulomb and nuclear breakup of halo nuclei”
 - at Theoretical Physics division, Argonne National Laboratory, USA, on August 14, 2003
 - at Cyclotron Institute, Texas A & M University, USA, on August 11, 2003,
 - at Saha Inst. of Nuclear Physics, on July 21, 2003.
12. “Fragmentation of drip line nuclei”
at Saha Inst. of Nuclear Physics, on July 31, 2002.
13. “Structure of halo nuclei from their Coulomb and nuclear breakup reactions”
at Saha Inst. of Nuclear Physics, on July 23, 2001.
14. “Coulomb breakup in Borromean nuclei”
at Saha Inst. of Nuclear Physics, on July 20, 2000.
15. “Coulomb breakup of one-neutron halo nuclei”
at Saha Inst. of Nuclear Physics, on August 3, 1999.

Schools, Workshops and visits :

1. TPSC visit to the Dept. of Physics, Panjab University, Chandigarh, March 18-22, 2009.
2. 53rd DAE-BRNS Symposium on Nuclear Physics, IIT-Roorkee, India, Dec. 22-26, 2008.
3. Workshop on Nuclear Physics research at the MYRRHA accelerator, IAP Belgian Research Initiative on eXotic nuclei (BRIX), April 6-9, 2008, Belgian Nuclear Research Centre, Mol, Belgium.
4. Advanced Many-Body Methods for Nuclear Physics, July 2-6, 2007, held at the ECT*, Trento, Italy.
5. 23rd meeting between Astrophysicists and Nuclear Physicists, December 11-12, 2006, held at the Université Libre de Bruxelles, Brussels, Belgium.
6. Workshop and School on low energy Nuclear Astrophysics, Jan. 16-20, 2006, held at the Saha Institute of Nuclear Physics, Kolkata.
7. 50th DAE-BRNS Symposium on Nuclear Physics, BARC, Mumbai, India, Dec. 12-16, 2005.
8. Visited the Dept. of Physics, University of York, UK, from Nov. 02 - 04, 2005.
9. SPIRAL 2 workshop - SPIRAL2 Reactions, Oct. 19 - 21, 2005, held in GANIL, Caen, France.
10. SPIRAL 2 workshop - Prospectives in Nuclear astrophysics with SPIRAL2, Oct. 17 - 18, 2005, held in GANIL, Caen, France.
11. XIVth Colloque GANIL, June 06-10, 2004, held in Giens, France.
12. SPIRAL 2 workshop - The intellectual challenges for SPIRAL 2, April 1-2, 2004, held in GANIL, Caen, France.

13. Visited the Theoretical Physics division of Argonne National Laboratory, USA, from Aug. 13-15, 2003.
14. Visited the Cyclotron Institute of Texas A & M University, USA, from Aug. 9-13, 2003.
15. 2nd RIA Summer School on Exotic beam Physics, NSCL, Michigan State University, USA, Aug. 4-9, 2003.
16. SERC School on Nuclear Physics with Radioactive Ion Beams, Feb. 10-23, 2002, held at Panjab University, Chandigarh, India.
17. DAE Symposium on Nuclear Physics, Dec. 26-30, 2001, held at Saha Inst. of Nuclear Physics, Kolkata, India.
18. International Symposium on Nuclear Physics, Bhabha Atomic Research Centre, Mumbai, India, from Dec. 18-22, 2000.
19. Visited the Institut für Theoretische Physik, University of Giessen, Germany, from Nov. 7 - Dec. 5, 2000.
20. Workshop on the Physics of Hadrons and Nuclei, Mar. 29-31, 2000, Saha Inst. of Nuclear Physics, Kolkata, India.
21. 3rd National Workshop on Nuclear Reactions, Mar. 14-16, 2000, held at Sambalpur University, Orissa, India.
22. Workshop on current topics in Quantum Field Theory, Jan. 18-22, 2000, Saha Inst. of Nuclear Physics, Kolkata, India.
23. DAE Symposium on Nuclear Physics, Dec. 27-31, 1999, held at Panjab University, Chandigarh, India.
24. III SERC School on Nuclear Physics at intermediate energies, Nov. 2-21, 1998, Variable Energy Cyclotron Centre, Kolkata, India.

Other experiences :

Member of the local organizing committee for

1. DAE Symposium on Nuclear Physics, Dec. 26-30, 2001, held at Saha Inst. of Nuclear Physics, Kolkata, India.
2. Workshop on the Physics of Hadrons and Nuclei, Mar. 29-31, 2000, Saha Inst. of Nuclear Physics, Kolkata, India.
3. Workshop on current topics in Quantum Field Theory, Jan. 18-22, 2000, Saha Inst. of Nuclear Physics, Kolkata, India.

Joint Secretary for DAE Symposium on Nuclear Physics, held at Indian Institute of Technology - Roorkee, India from Dec. 22-26, 2008.