

Curriculum vitae of Sakshi Gautam

Name: Sakshi Gautam

Place of Birth/Nationality Hamirpur, H.P./Indian

Field of Research: Theoretical Nuclear Physics

Present Position: Assistant Professor
Department of Physics, Panjab University
Chandigarh-160014, India.

Contact Information: sakshigautam@pu.ac.in; sakshigautm@gmail.com

Publications:

➤ Journals (Published/in press).....	26
➤ International / National Conferences.....	42
TOTAL	68

Educational Qualifications:

Degree	Board / University	Year of passing	Division	Percentage
Matric	H.P. Board of School Education, Dharmshala	2002	First	85.3%
Senior-secondary (10+2)	H.P. Board of School Education, Dharmshala	2004	First	87.4%
B.Sc. Hons. School (Physics)	Panjab University, Chandigarh	2007	First	87.7%
M.Sc. Hons. School (Physics)	Panjab University, Chandigarh	2009	First	87.2%
Ph. D. (Theoretical Nuclear Physics)	Panjab University, Chandigarh	2009-2012	Degree awarded (2013)	

Research Projects:

1. Principal Investigator of the project "On the thermalization, multifragmentation and associated phenomena in heavy-ion collisions" sanctioned by Department of Science and Technology (DST) vide no. SR/FTP/PS-185 of ₹ 15, 00, 000/- approx. (2014)
2. Principal Investigator of the project "Study of fragmentation in thermal bath and systematics in heavy-ion collisions" sanctioned by under Department of Atomic Energy (DAE)- Board of Research in Nuclear Sciences (BRNS) vide no. 37 (3)/14/28/2014-BRNS of ₹ 22, 00, 000/- approx. (2015)

Seminars/Talks delivered:

a) Invited talks/presentations

1. Dynamics of fragmentation in heavy ion collisions at intermediate energies
International Conference in Nuclear Physics with Energetic Heavy-ion Beams, Department of Physics, Panjab University, Chandigarh March 15-18, 2017.
2. Study of fragmentation dynamics in intermediate energy heavy-ion collisions
6th International Symposium on Nuclear Symmetry Energy, Tsinghua University, Beijing, China, June 13-18, 2016
3. Dynamics at intermediate energies: collective flow, fragmentation and nuclear stopping,
Conference on Emerging Challenges in Nuclear and many-body Physics, Jammu University, Jammu Nov. 10-11, 2014.
4. Recent calculations on multifragmentation using quantum molecular dynamics approach,
DAE symposium on Nuclear Physics, Banaras Hindu University, Varanasi, Dec. 8-12, 2014.
5. On the isospin effects in flow, its disappearance and other related phenomena,
11th International Conference on Nucleus-Nucleus collisions in San Antonio, Texas, USA May 27-June 01, 2012.
6. On the participant-spectator matter and thermalization of neutron-rich systems in heavy-ion collisions,
DAE Symposium on Nuclear Physics, Andhra University, A. P. December 2011.
7. Energy of vanishing flow: mass-isospin dependence,
DAE Symposium on Nuclear Physics, BITS Pilani, Rajasthan, December 2010.
8. Isospin effects on the mass dependence of energy of vanishing flow,
4th Chandigarh Science Congress, March 19-20, 2010, Panjab University, Chandigarh, India.
9. On the spin density formalism in fusion barriers,
3rd Chandigarh Science Congress, February 26-28, 2009, Panjab University, Chandigarh, India.

Employments:

1. Junior Research Fellowship of *Council of Scientific and Industrial Research (CSIR)*, Physics Department, Panjab University, Chandigarh, 2009-2011.
2. Senior Research Fellowship of *Council of Scientific and Industrial Research (CSIR)*, Physics Department, Panjab University, Chandigarh, 2011-2012 (*on leave since Oct. 2012*).
3. Assistant Professor in Physics, Dev Samaj College, Sector 45 B, Chandigarh (Oct. 2012-June 2014).
4. Assistant Professor in Physics, Department of Physics, Panjab University Chandigarh, (July 2014 onwards).

Ph.D. students guided/registered:

1. Rohit Sharma – Thesis title “Study of nuclear fragmentation and associated phenomena with thermal binding energies”, Degree Awarded 2017.
2. Mandeep Kaur – Thesis title “Study of symmetry energy and density-dependent cross-section using isospin diffusion, flow and associated phenomena” Degree awarded 2017.
3. Preeti Bansal – Thesis title “On the systematics in nuclear multifragmentation: system size and isospin effects” vide enroll. no. 19215 of Panjab University.
4. Sameeksha Sood- Working since July 2015.

M.Sc. Projects guided:

1. On the influence of different parameterizations of binding energies on fragmentation and related Phenomena – Shivani (2015)
2. Influence of nuclear radius on thermalization in heavy-ion collisions- Gonika (2016)
3. Isospin effects in nuclear multifragmentation- Lovepreet Kaur (2017)

Teaching experience:

1. B.Sc.(I.T.) Ist & IInd yr. (Physics lab) (Oct 2012-June 2014), M.Sc. (Hons. School) Ist yr. (Physics lab) , B.Sc. IInd yr. (Subsidiary lab) (July 2014-June 2016)
2. Electricity and Magnetism Course for B. Sc.(I.T.)-Ist year (Oct. 2012-June2014).
3. Mechanics Course for B. Sc.(I.T.)-Ist year (Oct. 2012-June2013).
4. Waves and Vibrations Course for B. Sc.(I.T.)-Ist year (Oct. 2012-June2013).
5. Optics and Lasers for B.Sc.(I.T.) 2nd year (July 2013-June2014).
6. Laser Physics (B.Sc. Hons. School) III yr. (July 2014-Dec 2014)
7. Quantum mechanics (B.Sc. Hons. School) III yr. (Jan 2015-May 2015)
8. Statistical & Qanatum Physics (B.Sc. Hons. School) II yr. (July 2015-Dec 2015, July 2016-Dec 2016)
9. Nuclear Physics (M.Sc. Hons. School) IYr. (Jan 2016-April 2016)
10. Thermodynamics (B.Sc. Hons. School) II yr. (Jan 2017- May 2017)

LIST OF PUBLICATIONS

I. International Journals

1. Isospin effects on the energy of vanishing flow in heavy-ion collisions
Sakshi Gautam, R. Chugh, A.D. Sood, R. K. Puri, J. Aichelin, and C. Hartnack
Journal of Physics G: Nuclear and Particle Physics Vol. **37**, 085102 (2010) (9 pages)
[Impact factor = 2.777] [UK].
2. Isospin effects on the mass dependence of the balance energy
Sakshi Gautam and Aman D. Sood
Physical Review C Vol. **82**, 014604 (2010) (6 pages)
[Impact factor = 3.715] [USA].
3. Isospin effects in the disappearance of flow as a function of colliding geometry
Sakshi Gautam, A. D. Sood, R. K. Puri and J. Aichelin
Physical Review C Vol. **83**, 014603 (2011) (6 pages)
[Impact factor = 3.715] [USA].
4. Sensitivity of transverse flow towards symmetry energy
Sakshi Gautam, A.D. Sood, R. K. Puri, and J. Aichelin
Physical Review C Vol. **83**, 034606 (2011) (5 pages)
[Impact factor = 3.715] [USA].
5. Density and temperature of neutron-rich systems at the energy of vanishing flow in heavy-ion collisions
Sakshi Gautam
Physical Review C Vol. **83**, 064604 (2011) (6 pages)
[Impact factor = 3.715] [USA].
6. Study of participant-spectator matter, thermalization and other related phenomena for neutron-rich colliding pair
Sakshi Gautam
European Physical Journal A-Hadrons and Nuclei Vol. **48**, 3 (2012) (6 pages)
[Impact factor = 2.421] [GERMANY].
7. Participant-spectator matter and thermalization of neutron-rich systems at the energy of vanishing flow
Sakshi Gautam and Rajeev K. Puri
Physical Review C Vol. **85**, 067601 (2012) (4 pages)
[Impact factor = 3.715] [USA].
8. Sensitivity of transverse flow toward isospin-dependent cross sections and symmetry energy
Sakshi Gautam, Raj Kumari and Rajeev K. Puri
Physical Review C Vol. **86**, 034607 (2012) (5 pages)
[Impact factor = 3.715] [USA].
9. Effect of momentum correlations on the properties of fragments produced in heavy-ion collisions
Sakshi Gautam and Rajni Kant
Ukrainian J. Physics Vol. **57**, 599, (2012) (7 pages)
10. Fragmentation and momentum correlations in heavy- ion collisions
Sakshi Gautam and Rajni Kant
Parmana Journal of Physics Vol. **78**, 389-398 (2012) (10 pages)

[Impact factor = 0.561] [Springer-GERMANY].

11. Phase-space analysis of fragments formed in heavy-ion collisions
Sakshi Gautam and Preeti Bansal
Physics of Particles and Nuclei Letters, Vol. **10**, 110 (2013) (9 pages)
[Impact factor = 0.672] [Springer-GERMANY].
12. On the isospin effects in the geometry of vanishing flow in heavy-ion collisions
Mandeep Kaur and **Sakshi Gautam**
Physics of Particles and Nuclei Letters, Vol. **10**, 228 (2013) (6 pages)
[Impact factor = 0.672] [Springer-GERMANY].
13. Role of structural effects on the collective transverse flow and the energy of vanishing flow in nuclear collisions
Rajni Bansal, **Sakshi Gautam**, Rajeev K. Puri and J. Aichelin
Physical Review C (Rapid comm) **87**, 061602 (R) (2013) (4 pages)
[Impact factor = 3.715] [USA].
14. Effect of isospin dependence of radius on transverse flow and fragmentation in isobaric pairs
Sakshi Gautam
Physical Review C **88**, 057603 (2013) (4 pages)
[Impact factor = 3.715] [USA].
15. On the nuclear reactions beyond fusion-fission
Sakshi Gautam and Rajeev K. Puri
AMU Physics Bulletin, AMU University, pg. 19-21 (2014)
16. Directed flow and its disappearance for asymmetric reactions
Lovejot and **Sakshi Gautam**
Physics of Particles and Nuclei Letters **11**, 232 (2014)
[Impact factor = 0.672] [Springer-GERMANY].
17. Systematic study of energy of vanishing flow using IQMD model and comparison with various theoretical models
Rajni Bansal, **Sakshi Gautam** and Rajeev K. Puri
Journal of Physics G: Nuclear Particle Physics **41**, 035103 (2014) (11 pages)
[Impact factor = 2.777] [UK].
18. Multifragmentation within a clusterization algorithm based on thermal binding energies
Rohit Kumar, **Sakshi Gautam** and Rajeev K. Puri
Physical Review C **89**, 064608 (2014) (7 pages)
[Impact factor = 3.715] [USA].
19. On the mass dependence of energy of vanishing flow for superheavy mass region
Rajni Bansal, **Sakshi Gautam**, Rajeev K. Puri and J. Aichelin
European Physical Journal A-Hadrons and Nuclei Vol. **51**, 2 (2015) (4 pages)
[Impact factor = 2.421] [GERMANY].
20. Systematic study of the transverse flow and its disappearance: role of nuclear compressibility and momentum-dependent interactions
Rajni Bansal and **Sakshi Gautam**
Physical Review C **91**, 024615 (2015) (6 pages)
[Impact factor = 3.715] [USA].

21. On the Peak mass production of different fragments in intermediate energy heavy-ion collisions
Preeti Bansal, **Sakshi Gautam** and Rajeev K. Puri
European Physical Journal A-Hadrons and Nuclei Vol. **51**, 139 (2015) (8 pages)
[Impact factor = 2.421] [GERMANY].
22. Multifragmentation of nearly symmetric and asymmetric reactions with a dynamical model
Arun Sharma, Arun Bharti, **Sakshi Gautam** and Rajeev K. Puri
Nuclear Physics A **945**, 95 (2016) (17 pages)
[Impact factor = 2.202]
23. Influence of the constant and the density-dependent scaling of the scattering cross section on reaction dynamics
Mandeep Kaur and **Sakshi Gautam**
Journal of Physics G: Nuclear and Particle Physics **43**, 025103 (2016) (21 pages)
[Impact factor = 2.777] [UK].
24. Influence of different binding energies in clusterization approach: fragmentation as an example
Rohit Kumar, **Sakshi Gautam** and Rajeev K. Puri
Journal of Physics G: Nuclear and Particle Physics **43**, 025104 (2016) (17 pages)
[Impact factor = 2.777] [UK].
25. Influence of different liquid drop based bindings on lighter fragments and entropy production
Rohit Kumar, Shivani and **Sakshi Gautam**
European Physical Journal A-Hadrons and Nuclei **52**, 112 (2016).
[Impact factor = 2.421] [GERMANY].
26. Fragmentation in isotopic and isobaric systems as probe of density dependence of nuclear symmetry energy
Mandeep Kaur, Sakshi Gautam and Rajeev K. Puri
Nuclear Physics A **955**, 133 (2016).

II. Conference proceedings

1. Dependence of balance energy on isospin degree of freedom
Sakshi Gautam, A. D. Sood, R. K. Puri, J. Aichelin, C. Hartnack
Proceedings of International symp. on Nucl. Phys., Vol. **54**, 454 (2009).
2. Participant-spectator matter at the energy of vanishing flow
Sakshi Gautam, A. D. Sood and R. K. Puri
Proceedings of International symp. on Nucl. Phys., Vol. **54**, 452 (2009).
3. Collective flow and balance energy in asymmetric heavy-ion collisions,
Supriya Goyal, **Sakshi Gautam**, A. D. Sood and R. K. Puri
Proceedings of International symp. on Nucl. Phys., Vol. **54**, 450 (2009).
4. Energy of vanishing flow: mass-isospin dependence,
Sakshi Gautam, A. D. Sood and R. K. Puri
Proceedings of DAE symp. on Nucl. Phys., Vol. **55**, 478 (2010).
5. N/Z dependence of balance energy as a probe of symmetry energy in heavy-ion collisions

- Sakshi Gautam**, A. D. Sood and R. K. Puri
 Proceedings of DAE symp. on Nucl. Phys., Vol. **55**, 504 (2010).
6. Isospin effects in the disappearance of flow as a function of colliding geometry
Sakshi Gautam, A. D. Sood and R. K. Puri
 Proceedings of DAE symp. on Nucl. Phys., Vol. **55**, 502 (2010).
 7. Impact parameter dependence of the isospin effects and mass dependence of balance energy
Sakshi Gautam
 Journal of Physics: Conference Series, Vol. **282**, 012022 (2011) (8 pages)
 [2, 046, 932 downloads] [UK].
 8. Isospin dependent nucleon-nucleon cross section and symmetry energy: sensitivity towards collective transverse flow
Sakshi Gautam and R. K. Puri
 Proceedings of DAE symp. on Nucl. Phys., Vol. **56**, 788 (2011).
 9. Study of participant-spectator matter and thermalization of isospin asymmetric reactions
Sakshi Gautam and R. K. Puri
 Proceedings of DAE symp. on Nucl. Phys., Vol. **56**, 748 (2011).
 10. N/Z dependence of balance energy throughout the colliding geometries,
Sakshi Gautam and R. K. Puri,
 Proceedings of DAE symp. on Nucl. Phys., Vol. **56**, 790 (2011).
 11. Transverse in-plane flow: a new probe of symmetry energy in fermi energy region
Sakshi Gautam and R. K. Puri
 Proceedings of DAE symp. on Nucl. Phys., Vol. **56**, 792 (2011).
 12. Study of nuclear dynamics of neutron-rich colliding pair at energy of vanishing flow
Sakshi Gautam
 Proceedings of DAE symp. on Nucl. Phys., Vol. **56**, 794 (2011).
 13. Role of isospin degree of freedom on N/Z dependence of participant-spectator matter
Sakshi Gautam
 Proceedings of DAE symp. on Nucl. Phys., Vol. **56**, 796 (2011).
 14. Geometry of vanishing flow: effect of symmetry energy and isospin dependent nucleon-nucleon cross-section
 Mandeep Kaur, **Sakshi Gautam** and Rajeev K. Puri
 Proceedings of DAE symp. on Nucl. Phys., Vol. **56**, 806 (2011).
 15. Density and thermalization in heavy-ion reactions at the geometry of vanishing flow
 Mandeep Kaur, **Sakshi Gautam** and R. K. Puri
 Proceedings of DAE symp. on Nucl. Phys., Vol. **57**, 708 (2012).
 16. Transverse flow and its disappearance: role of mass asymmetry
 Lovejot Kaur, **Sakshi Gautam** and R. K. Puri
 Proceedings of DAE symp. on Nucl. Phys., Vol. **57**, 726 (2012).
 17. The nuclear symmetry energy effect on flow: role of initialization
Sakshi Gautam and R. K. Puri
 Proceedings of DAE symp. on Nucl. Phys., Vol. **57**, 728 (2012).

18. Effect of neutron-skin thickness on transverse flow in heavy-ion collisions
Sakshi Gautam and R. K. Puri
Proceedings of DAE symp. on Nucl. Phys., Vol. **57**, 730 (2012).
19. Study of isospin effects in the disappearance of flow
Sakshi Gautam
Proceedings of DAE symp. on Nucl. Phys., Vol. **57**, 1002 (2012).
20. Isospin effects via symmetry energy in flow
Sakshi Gautam
AIP Proceedings, Vol. **1524**, 235 (2013) (4 pages).
21. Isospin effects in flow, its disappearance and other related phenomena
Sakshi Gautam
Journal of Physics: Conference Series, Vol. **420**, 012097 (2013) (11 pages)
[2, 046, 932 downloads] [UK].
22. Structural effects in the disappearance of flow
Rajni, **Sakshi Gautam**, R. K. Puri and J. Aichelin
Proceedings of International symp. on Nucl. Phys., Vol. **58**, 326-327 (2013).
23. Mass dependence of balance energy: comparison with experimental data
Rajni, **Sakshi Gautam** and R. K. Puri
Proceedings of International symp. on Nucl. Phys., Vol. **58**, 328-329 (2013).
24. Comparative analysis of IQMD model and one-body type models towards balance energy
Rajni Bansal, **Sakshi Gautam** and R. K. Puri
Proceedings of International symp. on Nucl. Phys., Vol. **58**, 330-331 (2013)
25. Comparison of the density-dependent and constant reduction of the cross section on the nuclear dynamics at intermediate energies
Rajni Bansal and **Sakshi Gautam**
Proceedings of International symp. on Nucl. Phys., Vol. **58**, 334-335 (2013).
26. Structural effects on the mass dependence of balance energy
Rajni Bansal and **Sakshi Gautam**
Proceedings of International symp. on Nucl. Phys., Vol. **58**, 332-333 (2013).
27. Probing isospin effects via symmetry energy and cross section in asymmetric heavy-ion collisions
Arun Kumar, **Sakshi Gautam**, Arun Bharti and R. K. Puri
Proceedings of International symp. on Nucl. Phys., Vol. **58**, 424-425 (2013).
28. Influence of density-dependent cross section on charge distribution
Mandeep Kaur, **Sakshi Gautam** and R. K. Puri
Proceedings of International symp. on Nucl. Phys., Vol. **58**, 386-387 (2013).
29. Study of system size effects on the energy of peak mass production for light charged particles
Preeti Bansal, **Sakshi Gautam** and R. K. Puri
Proceedings of International symp. on Nucl. Phys., Vol. **58**, 408-409 (2013).
30. Initialization effects via nuclear radius on transverse in-plane flow and its disappearance

Rajni Bansal and **Sakshi Gautam**

EPJ Web of Conferences 69, 00025 (2014) (8 pages)

31. Neutron to proton ratio dependence of energy of vanishing flow: role of system size and colliding geometry
Sakshi Gautam
EPJ Web of Conferences 69, 00026 (2014) (10 pages)
32. Recent calculations on multifragmentation using quantum molecular dynamics approach
Sakshi Gautam
Proceedings DAE symp. on Nucl. Phys., Vol. **59**, 21 (2014).
33. Role of isospin degree of freedom on production of light charged particles
Preeti Bansal, **Sakshi Gautam** and Rajeev K. Puri
Proceedings of DAE symp. on Nucl. Phys., Vol. **59**, 320-321 (2014).
34. Influence of in-medium effects via nucleon-nucleon scattering cross section on transverse flow and nuclear stopping
Mandeep Kaur, **Sakshi Gautam** and Rajeev K. Puri
Proceedings of DAE symp. on Nucl. Phys., Vol. **59**, 420-421 (2014).
35. Dynamical approach to study fragmentation in $^{16}\text{O}+^{80}\text{Br}/^{108}\text{Ag}$ reactions at various incident energies
Arun Sharma, Arun Bharti, **Sakshi Gautam** and Rajeev K. Puri
Proceedings of DAE symp. on Nucl. Phys., Vol. **59**, 436-437 (2014).
36. Study of fragmentation with clusterization algorithm based on temperature-dependent binding energies
Rohit Kumar, **Sakshi Gautam** and Rajeev K. Puri
Proceedings of DAE symp. on Nucl. Phys., Vol. **59**, 440-441 (2014).
37. Influence of symmetry energy on the multifragmentation in asymmetric heavy-ion collisions
Arun Sharma, Arun Bharti, **Sakshi Gautam** and Rajeev K. Puri
Proceedings of DAE symp. On Nucl. Phys. Vol. **60**, 526 (2015).
38. Analysis of colliding nuclear matter in terms of symmetry energy and cross section using computational method
Arun Sharma, Sakshi Gautam and Arun Bharti
AIP Proceedings, Vol. 1675 030099 (2015)
39. Role of model ingredients in the fragmentation of asymmetric colliding nuclei in heavy-ion collisions
Arun Sharma, Arun Bharti, **Sakshi Gautam** and Rajeev K. Puri
Perspective in Science (2016) in press
40. Identification of fragment structures and study of their various properties using quantum molecular dynamics model
Rohit Kumar, **Sakshi Gautam** and Rajeev K. Puri
Perspective in Science (2016) in press
41. Systematic study of neutron-proton ratio: a probe for the density dependence of nuclear symmetry energy
Mandeep Kaur, **Sakshi Gautam** and Rajeev K. Puri
Perspective in Science (2016) in press

42. Isospin effects on the peak mass production of heavy fragments
Preeti Bansal, **Sakshi Gautam** and Rajeev K. Puri
Perspective in Science (2016) in press