

Resume

Dr. Md. Sabir Ali

Assistant Professor

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Professional Summary:

PhD in Experimental Nuclear Physics with 10+ years of teaching and research experience. Published 15+ papers in high-impact journals (e.g., *Physical Review C*). Recipient of the Al Burj R. Rahman Award for outstanding PhD thesis. Seeking to advance research in fusion dynamics while mentoring students at the university level.

Academic Qualifications:

- ◆ **Ph.D. in Experimental Nuclear Physics** (2016) *Aligarh Muslim University*
Thesis: Study of Fusion Dynamics in Heavy Ion Interactions Below 8 MeV/nucleon
- ◆ **M.Sc. in Physics (2008) | B.Sc. in Physics (2006)**
Aligarh Muslim University | First Division

Research Profile:

1. Research Focus

- **Field:** Experimental Nuclear Physics
- **Specialization:** Heavy-ion interactions, fusion dynamics, incomplete fusion reactions at low energies ($\approx 4-8$ MeV/nucleon).
- **Key Themes**
 - Fusion suppression mechanism.
 - Role of projectile breakup and neutron transfer in fusion reactions.
 - Systematic studies of entrance channel parameters (e.g., critical angular momentum, Q value)

2. Methodologies & Techniques

- **Experimental:** Recoil range measurement, activation technique, particle and gamma ray detector
- **Data Analysis:** Origin, ROOT, Python-based simulation, CANDLE, CCFULL, PACE4, FRESCO
- **Collaborations:** AMU Aligarh, IUAC New Delhi, BARC Mumbai, JINR Dubna

3. Major Contributions

- Discovered ~20% fusion suppression for α -clustered projectiles (*Phys. Rev. C*, 2019).
- Established a systematic correlation between projectile breakup threshold energy and incomplete fusion probability (*Journal of Phys. G*, 2023).
- Proposed a new critical angular momentum limit for fusion incompleteness in ^{20}Ne induced reactions (*European Phys. J. Plus*, 2024).

4. Ongoing/Future Research

- Investigating positive Q value neutron transfer effect on above barrier fusion suppression (UGC-funded project).
- Expanding studies to exotic nuclei using advanced detection systems.
- Developing interdisciplinary applications in nuclear astrophysics, medical physics or energy research.

5. Grants and Projects

- **Principal Investigator (Ongoing):**
 - "Systematic study of positive Q value for neutron transfer effects on above barrier fusion suppression" (UGC-MANUU, 2023–Present).
- **Completed Projects:**
 - "Influence of entrance channel parameters on fusion suppression" (UGC-MANUU, 2020–2022).

Awards & Fellowships

- **Al Burj R. Rahman Award** (2016): Best PhD Thesis, AMU Aligarh.
- **Oral Presentation Prize** (2022): National Conference on Nuclear Dynamics, AMU.
- **Maulana Azad National Fellowship** (2010–2014): Ministry of Minority Affairs, Govt. of India.

Technical Skills

- **Experimental:** TEM, XRD, Cryogenics, Recoil Range Measurements
- **Computational:** Python, MATLAB, LaTeX, Origin, ROOT
- **OS:** Linux, Windows

Professional Affiliations

- Member, Indian Physics Association (IPA)
- Member, DAE Symposium on Nuclear Physics

Publications:

Peer-Reviewed Journals

1. Muntazir Gull, **Sabir Ali**, Kamal Kumar, IA Rizvi, Avinash Agarwal, Munish Kumar, Sunil Prajapati, Abhishek Yadav, Mohd Faizan Khan “Hindrane of complete fusion in $^{18}\text{O} + ^{165}\text{Ho}$ reaction at above the barrier energies: Role of angular momentum” The European Physical Journal Plus, vol. 139, pp. 825, 17 Sep. 2024.
2. Munish Kumar, Avinash Agarwal, Anuj Kumar Jashwal, Kamal Kumar, Abhishek Yadav, Sunil Dutt, S Prajapati, R Kumar, **Sabir Ali**, Muntazir Gull, IA Rizvi, AK Chaubey “Experimental study of the effect of projectile and target structure on breakup fusion reactions induced by N projectiles” The European Physical Journal Plus, vol. 139, pp. 15, May 2024.
3. **Sabir Ali**, Muntazir Gull, Kamal Kumar, Tauseef Ahmad, I. A. Rizvi, Avinash Agarwal, S. S. Ghugre, R. N. Ali and Faizan Khan “Systematic study of fusion suppression and its dependency on projectile breakup threshold energy” Journal of Physics G: Nuclear and Particle Physics, vol.51, pp.015101-17, 7 December, 2023.
4. Avinash Agarwal, Anuj Kumar Jaishwal, Munish Kumar, S. Prajapati, Sunil Dutt, Muntazir Gull, I. A. Rizvi, Kamal Kumar, **Sabir Ali**, Abhishek Yadav, R. Kumar, and A. K. Chaubey “Role of the entrance channel in the experimental study of incomplete fusion of ^{13}C with ^{93}Nb ” Physical Review C, vol.105, pp.034609, 10 March, 2022.
5. Avinash Agarwal, Anuj Kumar Jaishwal, Munish Kumar, S. Prajapati, Sunil Dutt, Muntazir Gull, I. A. Rizvi, Kamal Kumar, **Sabir Ali**, Abhishek Yadav, Rakesh Kumar, and A. K. Chaubey “Effect of neutron excess in the entrance channel on the $^{18}\text{O} + ^{93}\text{Nb}$ to incomplete system: An experimental study relevant to incomplete-fusion dynamics” Physical Review C, Vol. 103, pp.034602, 02 March 2021.
6. **Sabir Ali**, Kamal Kumar, Muntazir Gull, Tauseef Ahmad, I. A. Rizvi, Avinash Agarwal, A. K. Chaubey and S. S. Ghugre “Systematic of fusion incompleteness in reactions induced by α cluster projectile” Physical Review C, vol.100, pp.064607-10, 19 December, 2019.
7. Muntazir Gull, Kamal Kumar, **Sabir Ali**, I. A. Rizvi, S. Dutt, S. Prajapati, M. Kumar, Avinash Agarwal, A. Yadav and R. Kumar “Systematic study of incomplete fusion reactions: Role of various entrance channel parameters” Indian Journal of Pure and Applied Physics, vol. 58, April 2020, pp.-263-266.
8. Muntazir Gull, Kamal Kumar, **Sabir Ali**, Tauseef Ahmad, Sunil Dutt, I. A. Rizvi, Avinash Agarwal and R. Kumar “Incomplete fusion in $^{16}\text{O} + ^{89}\text{Y}$ reactions at energies of ≈ 7 MeV/ nucleon” Physical Review C, vol. 98, pp. 034603-10, 05 September, 2018.
9. **Sabir Ali**, Tauseef Ahmad, Kamal Kumar, Muntazir Gull, I. A. Rizvi, Avinash Agarwal, S. S. Ghugre, A. K. Sinha and A. K. Chaubey “Role of partial linear momentum transfer on incomplete

fusion reaction” Eur. Phys. J. A., vol. 54, pp. 56, 16 April, 2018.

10. **Sabir Ali**, Tauseef Ahmad, Kamal Kumar, I. A. Rizvi, Avinash Agarwal, S. S. Ghugre, A. K. Sinha, and A.K. Chaubey “Effect of projectile break-up threshold energy on incomplete fusion at energy $\approx$ 4-7 MeV/nucleon” Journal of Modern Physics, vol. 5, pp.2063-2074, 7 December, 2014.
11. Kamal Kumar, Tauseef Ahmad, **Sabir Ali**, I. A. Rizvi, Avinash Agarwal, R. Kumar and A. K. Chaubey “Role of incomplete fusion of the projectile in $^{16}\text{O} + ^{115}\text{In}$ interaction at low energies” Physical Review C, vol. 89, pp.054614-8, May 2014.
12. Kamal Kumar, Tauseef Ahmad, **Sabir Ali**, I. A. Rizvi, Avinash Agarwal, R. Kumar, and A. K. Chaubey “Influence of projectile breakup on $^{16}\text{O} + ^{115}\text{In}$ reaction at energies $\approx$ 4-7 MeV/ nucleon” Physical Review C, vol. 88, pp.064613-9, December 2013.
13. Kamal Kumar, Tauseef Ahmad, **Sabir Ali**, I. A. Rizvi, Avinash Agarwal, R. Kumar, K. S. Golda, and A. K. Chaubey “Low energy incomplete fusion and its sensitivity to projectile structure” Physical Review C, vol. 87, pp.044608-9, April 2013.

International Conference Proceedings:

1. **Sabir Ali**, Muntazir Gull, Moin Shaikh, Mohd. Faizan Khan, A. Chalil, Kamal Kumar, I. A. Rizvi “Systematic of Above Barrier Fusion Suppression and Role of *PQNT* Effect” in proceedings of International Conference on Nuclear Structure and Nuclear Reactions, Department of Physics, AMU, Aligarh (India), pp.35, 05-07 May, 2025.
2. **Sabir Ali**, Muntazir Gull, A. Chalil, Kamal Kumar, I. A. Rizvi, Mohd. Faizan, R. Kumar, Avinash Agarwal, Munish Kumar, Sunil Prajapati, and Abhishek Yadav “Role of neutron transfer in $^{18}\text{O} + ^{165}\text{Ho}$ reaction at above the barrier energy” International Conference on Current Advances in applied Physics, Department of Physics, MANUU, Hyderabad (India), pp.62, 20-21 Feb., 2025.
3. **Sabir Ali**, Muntazir Gull, A. Chalil, Mohd. Faizan Khan, Kamal Kumar, I. A. Rizvi, Avinash Agarwal, Munish Kumar, Sunil Prajapati, Abhishek Yadav “Measurement of neutron transfer reaction cross section for the $^{18}\text{O} + ^{165}\text{Ho}$ system” in proceedings of DAE Symposium on Nuclear Physics, IIT Roorkee (India) vol. 68, pp.483-484, 07-11 Dec. 2024.
4. Mohd. Faizan Khan, Avinash Agarwal, Anuj Kumar Jashwal, Harsh Vardhan, Munish Kumar, K. Kumar, S. Dutt, **Sabir Ali**, I. A. Rizvi, A. K. Chaubey “Study of complete fusion in $^{18}\text{O} + ^{89}\text{Y}$ at Pelletron energies” in proceedings of DAE Symposium on Nuclear Physics, IIT Roorkee (India) vol. 68, pp.403-404, 07-11 Dec. 2024.
5. **Sabir Ali**, Muntazir Gull, I. A. Rizvi “Analysis of ^{20}Ne induced reactions and role of critical angular momentum” in proceedings of DAE Symposium on Nuclear Physics, IIT Indore (India) vol. 67, pp.657-658, December 09-13 December, 2023.
6. Muntazir Gull, **Sabir Ali**, Kamal Kumar, I. A. Rizvi, Rakesh Kumar, Avinash Agarwal, Sunil Prajapati, Munish Kumar, Abhishek Yadav “Fusion incompleteness in non α cluster projectile: Role of excess neutrons” in proceedings of DAE Symposium on Nuclear Physics, BARC Mumbai (India) vol. 65, pp.371-372, Dec. 01-05 2021.
7. Muntazir Gull, **Sabir Ali**, K. Kumar, I.A. Rizvi, T. Ahamad, S. Dutt, R. Kumar, A. Agarwal, A.K. Chaubey, Rumaisa Jan, Nazima Shabir, Bisma Amin “Study of incomplete fusion dynamics in the light of critical angular momentum and universal fusion function” in proceedings of DAE Symposium on Nuclear Physics, BARC Mumbai (India) vol. 65, pp.373-374, Dec. 01-05 2021

8. Muntazir Gull, Kamal Kumar, **Sabir Ali**, Sunil Dutt, Sunil Prajapati, Munish Kumar, Avinash Agarwal, Abhishek Yadav, R. Kumar and I. A. Rizvi, “Study of fusion incompleteness in $^{13}\text{C} + ^{165}\text{Ho}$ from excitation function measurement at energy $\sim 3\text{-}7$ MeV/nucleon” in proceedings of DAE Symposium on Nuclear Physics, BARC Mumbai (India) vol. 63, pp.426-427, December 10-14, 2018.
9. **Sabir Ali**, Muntazir Gull, Tauseef Ahmad, I. A. Rizvi, Avinash Agarwal “Fusion suppression in ^{20}Ne induced reaction” in proceedings of DAE Symposium on Nuclear Physics, BARC Mumbai (India) vol. 63, pp.652-653, December 10-14, 2018.
10. Munish Kumar, Avinash Agarwal, Sunil Dutt, Kamal Kumar, R. Kumar, I. A. Rizvi, Abhishek Yadav, Muntazir Gull, **Sabir Ali** and A. K. Chaubey “Effect of entrance channel parameters on incomplete fusion reaction dynamics at low energies” DAE Symposium on Nuclear Physics, BARC Mumbai (India) vol. 63, pp.606-607, December 10-14, 2018.
11. Kamal Kumar, **Sabir Ali**, Tauseef Ahmad, I. A. Rizvi, Avinash Agarwal, Rakesh Kumar, and A.K. Chaubey “Low energy complete fusion: observations of a significant incomplete fusion at $\ell < \ell_{\text{crit}}$ ” in EPJ Web of Conferences 86, 0011, January 2015.
12. **Sabir Ali**, Tauseef Ahmad, Kamal Kumar, I. A. Rizvi, Avinash Agarwal, S.S. Ghugre, A.K. Sinha, and A.K. Chaubey “Investigation of complete and incomplete fusion in $^{20}\text{Ne} + ^{51}\text{V}$ system using recoil range measurement” in EPJ Web of Conferences 86, 0002, January 2015.
13. Kamal Kumar, **Sabir Ali**, Tauseef Ahmad, I. A. Rizvi, Avinash Agarwal and A.K. Chaubey “Role of entrance channel parameters on incomplete fusion reaction dynamics” in Proceedings of the International Symposium on Nuclear Physics, BARC Mumbai (India) vol. 58, pp.406-407, December, 2-6, 2013.
14. **Sabir Ali**, Tauseef Ahmad, Kamal Kumar, I. A. Rizvi, Avinash Agarwal S. S. Ghugre, A. K. Sinha, and A.K. Chaubey “Evidence of partial linear momentum transfer in $^{20}\text{Ne} + ^{51}\text{V}$ system at energy 7MeV/nucleon” in Proceedings of the International Symposium on Nuclear Physics, BARC Mumbai (India) vol. 58, pp.464-465, December, 2-6, 2013.
15. **Sabir Ali**, Kamal Kumar, Tauseef Ahmad, I. A. Rizvi, Avinash Agarwal and A.K. Chaubey “Systematics of incomplete fusion probability and its correlation with complete fusion suppression” in AIP Conference Proceedings 1524, pp.178-181, 2013.
16. Kamal Kumar, **Sabir Ali**, Tauseef Ahmad, I. A. Rizvi, Avinash Agarwal and A.K. Chaubey “Effect of projectile break-up on incomplete fusion reaction dynamics” in AIP Conference Proceedings 1524, pp.182-185, 2013.
17. Avinash Agarwal, Suneel Dutt, Anjali Sharma, I. A. Rizvi, Kamal Kumar, **Sabir Ali**, T. Ahmad, Rakesh Kumar and A. K. Chaubey “Investigation of the influence of incomplete fusion on complete fusion of ^{16}O - induced reactions at moderate excitation energies.” EPJ Web of Conferences 38, 17001-4 (2012).

International Conference Proceedings:

1. Muntazir Gull, Kamal Kumar, **Sabir Ali**, Tauseef Ahmad, Sunil Dutt, I. A. Rizvi, Avinash Agarwal, and R. Kumar and A. K. Chaubey “Effect of two neutron excess projectile on low energy incomplete fusion dynamics” in Proceedings of the DAE Symposium on Nuclear Physics, Thapar University Patiyala, vol. 62, pp.442-443, December 20-24, 2017.
2. Munish Kumar, Avinash Agarwal, S. Prajapati, Sunil Dutt, Kamal Kumar, R. Kumar, I. A.

Rizvi, Abhishek Yadav, M. Gull, **S. Ali** and A. K. Chaubey “Effect of projectile structure on incomplete fusion reaction dynamics for vanadium” in Proceedings of the DAE Symposium on Nuclear Physics, Thapar University Patiyala, vol. 62, pp.654-655, December 20-24, 2017.

3. **Sabir Ali**, Tauseef Ahmad, Kamal Kumar, Muntazir Gull, I. A. Rizvi, Sunil Dutt, Avinash Agarwal, A. K. Sinha and A.K. Chaubey “Fusion incompleteness in reaction induced by ^{20}Ne at energy $\approx 4\text{-}7\text{ MeV/A}$ ” in Proceedings of the DAE Symposium on Nuclear Physics, SINP (Kolkata), vol. 61, pp.540-541, December 05-09, 2016.
4. Muntazir Gull, Kamal Kumar, Tauseef Ahmad, **Sabir Ali**, Sunil Dutt, I. A. Rizvi, Avinash Agarwal, R. Kumar and A.K. Chaubey “Investigation complete and incomplete fusion by recoil range distribution measurements $\approx 105\text{ MeV}$ ” in Proceedings of the DAE Symposium on Nuclear Physics, SINP (Kolkata), vol. 61, pp.566-567, December 05-09, 2016.
5. Avinash Agarwal, Munish Kumar, Sunil Dutt, Kamal Kumar, R. Kumar, I. A. Rizvi, Abhishek Yadav, Muntazir Gull, **Sabir Ali**, and A.K. Chaubey “Measurement and analysis of some excitation functions in heavy induced reactions: A case of $^{18}\text{O} + ^{51}\text{V}$ system Investigation complete and incomplete fusion by recoil range distribution measurements $\approx 105\text{ MeV}$ ” in Proceedings of the DAE Symposium on Nuclear Physics, SINP (Kolkata), vol. 61, pp.642-643, December 05-09, 2016.
6. Suhail A. Tali, Harish Kumar, M. Afzal Ansari, D. Singh, Rahbar Ali, Asif Ali, Siddharth Parashari, **Kamal Kumar**, N. P. M. Sathik, R. Dubey, Indu Bala, Rakesh kumar, R. P. Singh and S. Muralithar “Probing of incomplete fusion from the measurement of recoil range distributions” in Proceedings of the DAE Symposium on Nuclear Physics, Prasanthi Nilayam, vol. 60, pp.520-521, December 07-11, 2015.
7. **Sabir Ali**, Tauseef Ahmad, Kamal Kumar, I. A. Rizvi, Sunil Dutt, Avinash Agarwal, S. S. Ghugre, A.K. Sinha and A.K. Chaubey “Dependence of incomplete fusion reaction on projectile structure” in Proceedings of the DAE Symposium on Nuclear Physics, Prasanthi Nilayam, vol. 60, pp.582-583, December 07-11, 2015.
8. Kamal Kumar, Sunil Dutt, **Sabir Ali**, Tauseef Ahmad, I. A. Rizvi, Avinash Agarwal and A.K. Chaubey “Large Influence of fusion incompleteness in incomplete fusion reaction dynamics at low energies” in Proceedings of the National Symposium on Nuclear Physics, BHU (Varanasi) vol. 59, pp.414-415, December, 7-12, 2014.
9. **Sabir Ali**, Tauseef Ahmad, Kamal Kumar, I. A. Rizvi, Sunil Dutt, Avinash Agarwal S. S. Ghugre, A. K. Sinha, and A.K. Chaubey “Study of complete and incomplete fusion reactions at near and above the barrier energy” in Proceedings of the National Symposium on Nuclear Physics, BHU (Varanasi) vol. 59, pp.480-481, December, 7-12, 2014.
10. Kamal Kumar, Tauseef Ahmad, **Sabir Ali**, I.A. Rizvi, Avinash Agarwal, Rakesh Kumar, K.S. Golda and A.K. Chaubey “Influence of incomplete fusion on complete fusion in $^{16}\text{O} + ^{115}\text{In}$ interaction” in Proceedings of the DAE Symposium on Nuclear Physics, University of Delhi, Delhi, vol. 57, pp.514-515, December 03-07, 2012.
11. Kamal Kumar, **Sabir Ali**, Tauseef Ahmad, I.A. Rizvi, Avinash Agarwal and A.K. Chaubey “Effect of projectile structure on incomplete fusion reaction dynamics” in Proceedings of the DAE Symposium on Nuclear Physics, University of Delhi, Delhi, vol. 57, pp.516-517, December 03-07, 2012.
12. **Sabir Ali**, Tauseef Ahmad, Kamal Kumar, I.A. Rizvi, Avinash Agarwal and A.K. Chaubey “Study of incomplete fusion probability induced by ^{20}Ne on different targets” in Proceedings of the DAE

Symposium on Nuclear Physics, University of Delhi, Delhi, vol. 57, pp.538-539, December 03-07, 2012.

13. **Sabir Ali**, Kamal Kumar, Tauseef Ahmad, I.A. Rizvi, Avinash Agarwal and A.K. Chaubey “Fusion and break-up cross section of alpha cluster projectiles on ^{51}V target” in Proceedings of the DAE Symposium on Nuclear Physics, University of Delhi, Delhi, vol. 57, pp.540-541, December 03-07, 2012.
14. Kamal Kumar, Tauseef Ahmad, **Sabir Ali**, I.A. Rizvi, Avinash Agarwal, Rakesh Kumar, K.S. Golda and A.K. Chaubey “Study of reaction dynamics in $^{16}\text{O} + ^{115}\text{In}$ system using recoil range distribution” in Proceedings of the DAE Symposium on Nuclear Physics, Andhra University, Visakhapatnam, vol. 56, pp.462-463, December 26- 30, 2011.
15. **Sabir Ali**, Tauseef Ahmad, Kamal Kumar, I.A. Rizvi, Avinash Agrawal, S.S. Ghugre, A.K. Sinha and A.K. Chaubey “Investigation of the role of break up processes in the fusion of the $^{20}\text{Ne} + ^{51}\text{V}$ system” in Proceedings of the DAE Symposium on Nuclear Physics, Andhra University, Visakhapatnam, vol. 56, pp.588-589, December 26-30, 2011.

Personal Details:

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