Curriculum Vitae

1. **Name:** **Dr. Varinderjit Singh**
2. **Current Status:** **Assistant Professor, Department of Physical Sciences, IKG Punjab Technical University, Kapurthala**
3. **Previous Job:** **Post-Doctoral fellow, Indiana University, Bloomington, IN, USA (From 1st Aug. 2014 to 30th March 2017)**
4. **Date of birth:** 1st March, 1985.
5. **Marital Status:** Unmarried
6. **Nationality:** Indian
7. **Father's name:** Balwant Singh
8. **Permanent address:** H. No. 7692, Street No. 4, New Guru Angad Colony, Ludhiana, Punjab -141003, India.
   Email: Mangat_phy@yahoo.co.in
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9. **Address for Correspondence:-** H. No. 7692, Street No. 4, New Guru Angad Colony, Ludhiana, Punjab -141003, India.
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10. **Educational Qualifications:**

S. No.	Exam Passed	Board/ University	Subject	Year	%age
1.	Ph.D	P.U., Chandigarh	Experimental Nuclear Physics	2013	Awarded
2.	M.Sc.	P.U., Chandigarh	Physics	2007	73.10
3.	B.Sc	P.U., Chandigarh	Physics, Chemistry, Math, English	2005	84.95
4.	+2	P.S.E.B	Physics, Chemistry, Math, English	2002	76

5.	Matric	P.S.E.B	Science, Math, S.S, Eng., Hindi, Punjabi	2000	80.15

11. Details of Employment:

Position	Insitute	From	Till
Shyama Prasad Mukherjee Fellow (SRF)	**Panjab University, Chandigarh**	**26-09-2012**	**31-03-2013**
Assistant Professor	**Central University of Punjab, Bathinda**	**02-05-2013**	**11-08-2013**
Visiting Scientist	**GSI Helmholtzzentrum fur Schwerionenforschung GmbH, Darmstadt, Germany**	**02-09-2013**	**28-11-2013**
Assistant Professor	**National Institute of Technology, Jalandhar**	**01-01-2014**	**06-06-2014**
Post-Doctoral fellow	**Department of Chemistry, Indiana University, Bloomington, IN, USA**	**01-08-2014**	**30-03-2017**

12. Ph. D Thesis Title: STUDY OF DISSIPATION STRENGTH AND ROLE OF SHELL CLOSURE IN FISSION DYNAMICS AT HIGH EXCITATION ENERGIES.

13. Current Research Interest: Experiment Nuclear Physics (Fusion-fission reactions).

14. Thesis Supervisor: Dr. Bivash R. Behera, Assistant Professor,
Department of Physics, Panjab University,
Chandigarh-160014, India.

15. Other Achievements:

- Shyama Prasad Mukherjee fellowship (CSIR) June 2008 (Highest rank fellowship of India Govt.).
- Participated in 62nd Lindau meeting of noble laureates and students, Lindau, Germany 2012.
- Participated in HOPE meeting of noble laureates and student, Japan 2011.

- CSIR-UGC NET- (June 2007)
- GATE (2007) qualified.
- Ph. D entrance test of P.U. (2007) qualified.
- State Merit Fellowship during M.Sc.
- Award of R.L Aggarwal Gold Medal in B.Sc for highest score in Physics.

16. Research Experience: ~ Nine and half years.

17. Other Experience:

- Programming in C, C++, ROOT and FORTRAN.

18. <u>Summary of Thesis work</u>:

My thesis work was mainly focused on the study of the effect of shell closure on fusion-fission dynamics. Main idea behind this study is to see the variation of dissipation strength for shell closed and non-shell closed compound nucleus. For this study, ^{213,215,217}Fr compound nuclei were populated by bombarding ^{19}F beam on ^{194,196,198}Pt targets. Out of these, one compound nucleus is shell closed (N=126) and the other two are away from shell closure (N=128 and 130). A number of probes exist to study dissipation effects like neutron multiplicity, charged particle multiplicity, evaporation residue cross-sections, fission cross-sections, crystal blocking, K-shell ionization and fission fragments mass-energy correlation measurements. Out of these probes, we have used neutron multiplicity, fission cross-sections and evaporation residue cross-sections measurements for the present thesis work. A comprehensive knowledge of these processes will be helpful for better understanding of the shell effects on fission dynamics, which will help in understanding the production mechanism of super heavy elements.

In neutron multiplicity measurements, neutrons were detected in coincidence with fission fragments and contributions from pre-scission and post-scission components were extracted using three point moving source fitting. It is observed from the experimental results that pre-scission neutron multiplicities are less for shell-closed compound nucleus as compared to that of non-shell closed compound nuclei. The statistical model calculations were also carried out using Bohr-Wheeler and Kramers modified fission widths. The shell correction in level density was taken into account using Ignatyuk prescription. The statistical model was modified to use shell corrected fission barrier and

experimental masses instead of liquid drop model masses. The statistical model calculations with Bohr-Wheeler fission width explains the neutron multiplicities at the lowest excitation energy, but under-predicts the same at higher energies. Detailed statistical model calculations with Kramers modified fission width were also carried out to extract the magnitude of dissipation strength. The reduced dissipation coefficient (β) was treated as a free parameter for fitting the experimental results. It was observed that the strengths of the reduced dissipation coefficient required for non-shell closed nuclei are nearly same, though it is suppressed for closed-shell nucleus at low excitation energy. This indicates that the shell-assisted increase in the survival probability of shell closed compound nucleus can be offset to some extent owing to the reduction in dissipation coefficient. This may adversely affect the synthesis of super-heavy elements.

This study was extended to the measurements of fission and evaporation residues cross-sections for the same systems. The experimental fusion cross-sections were obtained by adding both fission and evaporation residues cross-sections. The experimental fusion cross-sections were fitted using coupled channel calculations (CCDEF) and compound nucleus spin distributions were obtained for each compound nuclei at various excitation energies. These spin distributions along with the experimental fusion cross-sections were fed as input to the statistical model calculations (using same code as used for neutron multiplicity analysis). It is observed that the statistical model calculations without dissipation (Bohr-Wheeler fission width) over predict the measured fission cross-sections whereas, under predict evaporation residue cross-sections. Further the dissipation effects were added to the statistical model calculations (Kramers modified fission width) and simultaneous fitting of fission and evaporation residue cross-sections was carried out. It was observed that the dissipation strength required for shell closed compound nucleus is suppressed as compared to non-shell closed nuclei. From all these observations, it can be concluded that shell closure in compound nucleus results in the suppression of dissipation strength.

The lowering of dissipation strength observed for the shell closed compound nucleus can act as an input for designing the experiments for the search of super heavy elements. It has been observed earlier that the shell closure in compound nucleus provides extra stability to the compound nucleus and can results in enhancement of

evaporation residue cross-sections, which in turn can enhance the survival probability of super heavy elements. On the other hand, the shell closure results in the lowering of dissipation strength as observed in the present study. The lowering of dissipation strength can provide a less hindered path to fission, which results in lowering of evaporation residues cross-sections and hence suppresses the survival probability of super heavy elements. The net enhancement or suppression of survival probability of super heavy element will be decided by the collective effect of both the effects mentioned above. Hence, while planning for some new experiments for the synthesis of super heavy elements, the lowering of dissipation strength due to shell closure in compound nucleus should also be taken into consideration.

Full List of Publications

I. International Journals:

1. Fabrication of Thin Self Supporting Platinum Targets using Evaporation Techniques.
   Varinderjit Singh, S.R. Abhilash, B.R. Behera and D. Kabiraj, Nucl. Instrum. Methods A **635**, 20 (2011).
2. Development of a compact E x B microchannel plate detector for beam imaging.
   B.B. Wiggins, **Varinderjit Singh**, J. Vadas, J. Huston, T.K. Steinbach, S. Hudan and R.T. deSouza, Nucl. Instrum. Methods A **866**, 202 (2017).
3. High-rate axial-field ionization chamber for particle identification of radioactive beams
   J. Vadas, **Varinderjit Singh**, G. Visser, A. Alexander, S. Hudan, J. Huston, B.B. Wiggins, A. Chbihi, M. Famiano, M.M. Bischak, and R.T. deSouza, Nucl. Instrum. Methods A **837**, 28 (2016).
4. Fusion Enhancement at near and sub-barrier energies in $^{19}O + ^{12}C$.
   Varinderjit Singh, J. Vadas, T.K. Steinbach, B.B. Wiggins, S. Hudan, R. T. deSouza, Zidu Lin, C.J. Horowitz, L.T. Baby, S.A. Kuvin, Vandana Tripathi, I. WiedenhÖver, and A.S. Umar, Physics Letter B **765**, 99 (2017).
5. Evaporation residue excitation function measurement for $^{19}F + ^{194,196,198}Pt$ reactions.

Varinderjit Singh, B.R. Behera, Maninder Kaur, A. Kumar, K.P. Singh, N. Madhavan, S. Nath, J. Gehlot, G. Mohanto, A. Jhingan, Ish Mukul, T. Varughese, Jhilam Sadhukhan, Santanu Pal, S. Goyal, A. Saxena, S. Santra, and S. Kailas, Phys. Rev. C **89**, 024609 (2014).

6. Neutron multiplicity measurements for $^{19}F + ^{194,196,198}Pt$ systems to investigate the effect of shell closure on nuclear dissipation.

   Varinderjit Singh, B.R. Behera, Maninder Kaur, A. Kumar, P. Sugathan, K.S. Golda, A. Jhingan, M.B. Chatterjee, R.K. Bhowmik, Davinder Siwal, S. Goyal, Jhilam Sadhukhan, Santanu Pal, A. Saxena, S. Santra, S. Kailas, Phys. Rev. C **87**, 064601 (2013).

7. Search for an effect of shell closure on nuclear dissipation via a neutron-multiplicity measurement.

   Varinderjit Singh, B.R. Behera, Maninder Kaur, P. Sugathan, K.S. Golda, A. Jhingan, Jhilam Sadhukhan, Davinder Siwal, S. Goyal, S. Santra,A. Kumar, R. K. Bhowmik, M. B. Chatterjee, A. Saxena, Santanu Pal and S. Kailas, Phys. Rev. C **86**, 014609 (2012).

8. Fission time scale from pre-scission neutron and α multiplicities in the $^{16}O + ^{194}Pt$ reaction.

   K. Kapoor, S. Verma, P. Sharma, R. Mahajan, N. Kaur, G. Kaur, B.R. Behera, K.P. Singh, A. Kumar, H. Singh, R. Dubey, N. Saneesh, A. Jhingan, P. Sugathan, G. Mahanto, B.K. Nayak, A. Saxena, H.P. Sharma, S.K. Chamoli, I. Mukul and **V. Singh**, Phys. Rev. C **96**, 054605 (2017).

9. Experimental measurement of $^{12}C + ^{16}O$ fusion at stellar energies.

   X. Fang, W.P. Tan, M. Beard, G. Gilardy, H. Jung, Q. Liu, S. Lyons, D. Robertson, K. Setoodehnia, C. Seymour, E. Stech, B. Vande Kolk, M. Wiescher, R.T. deSouza, S. Hudan, **V. Singh**, X.D. Tang and E. Uberseder, Phys. Rev. C **96**, 045804 (2017).

10. Evidence for survival of the α cluster structure in light nuclei through the fusion process

    J. Vadas, T.K. Steinbach, J. Schmidt, **Varinderjit Singh**, C. Haycraft, S. Hudan, and R.T. deSouza, L.T. Baby, S.A. Kuvin, and I. Wiedenhover, Phys. Rev. C **92**, 064610 (2015).

11. Probing nuclear dissipation via evaporation residue excitation functions for the $^{16,18}O + ^{198}Pt$ reactions

    Rohit Sandal, B.R. Behera, **Varinderjit Singh**, Maninder Kaur, A. Kumar, Gurpreet Kaur, P. Sharma, N. Madhavan, S. Nath, J. Gehlot, A. Jhingan, K.S. Golda, Hardev Singh, S. Mandal, S. Verma, E. Prasad, K.M. Varier, A.M. Vinodkumar, A. Saxena, Jhilam Sadhukhan and Santanu Pal, Phys. Rev. C **91**, 044621 (2015).

12. Effects of N/Z in pre-scission neutron multiplicity for $^{16,18}O + ^{194,198}Pt$ systems and statistical model calculations.

    Rohit Sadal, B.R. Behera, **Varinderjit Singh**, M. Kaur, A. Kumar, G. Singh, K.P. Singh, S. Kalkal, D. Siwal, S. Goyal, S. Mandal, E. Prasad, K. Mahata, A. Saxena, J. Sadhukhan and Santanu Pal, Phys. Rev. C **87**, 014604 (2013).

13. Determination of shell correction energies at saddle point using pre-scission neutron multiplicities.

    Golda K.S, A. Saxena, V.K. Mittal, K. Mahata, P. Sugathan, A. Jhingan, **V. Singh**, R. Sandal, S. Goyal, J. Gehlot, A. Dhal, B.R. Behera, R.K. Bhowmik, and S. Kailas, Nucl. Phys. A **913**, 157 (2013).

14. Evaporation residue excitation function and spin distribution for $^{31}P + ^{170}Er$.

    G. Mohanto, N. Madhavan, S. Nath, J. Gehlot, Ish Mukul, A. Jhingan, T. Varughese, A. Roy, R. K. Bhowmik, I. Mazumdar, D. A. Gothe, P. B. Chavan, J. Sadhukhan, S. Pal, Maninder Kaur, **Varinderjit Singh**, A. K. Sinha and V. S. Ramamurthy, Phys. Rev. C **88**, 034606 (2013).

15. High spin structure in $^{130,131}Ba$.

    Navneet Kaur, A. Kumar, G. Mukherjee, Amandeep Singh, S. Kumar, Rajbir Kaur, **Varinderjit Singh**, B.R. Behera, K.P. Singh, G. Singh, H.P. Sharma, Suresh Kumar, M. Kumar Raju, P.V. Madhusudhan Rao, S. Muralithar, R.P. Singh, Rakesh Kumar, N. Madhvan, and R.K. Bhowmik, Eur. Phys. J. A **50**, 5 (2014).

16. Effect of projectile breakup on fission-fragment mass distributions in the $^{6,7}Li + ^{238}U$ reactions

    S. Santra, A. Pal, P. K. Rath, B. K. Nayak, N. L. Singh, D. Chattopadhyay, B. R. Behera, **Varinderjit Singh**, A. Jhingan, P. Sugathan, K. S. Golda, S. Sodaye, S. Appannababu, E. Prasad, and S. Kailas, Phys. Rev. C **90**, 064620 (2014).

17. Anomalous deviations from statistical evaporation spectra for the decay of the ^{73}Br and ^{77}Rb compound systems

    Maninder Kaur, B. R. Behera, Gulzar Singh, **Varinderjit Singh**, Rohit Sandal, A. Kumar, H. Singh, Gurpreet Singh, K. P. Singh, N. Madhavan, S. Nath, A. Jhingan, J. Gehlot, K. S. Golda, P. Sugathan, Davinder Siwal, Sunil Kalkal, E. Prasad, and S. Appannababu, Phys. Rev. C **89**, 034621 (2014).

18. Fusion measurement for the $^{18}O + ^{194}Pt$ reaction and search for neutron shell closure effects.

P.V. Laveen, E. Prasad, N. Madhavan, S. Pal, J. Sadhukhan, S. Nath, J. Gehlot, A. Jhingan, K.M. Varier, R.G. Thomas, A.M. Vinodkumar, A. Shamiath, T. Varughese, P. Sugathan, B.R.S. Babu, S. Appannababu, K.S. Golda, B.R. Behera, **Varinderjit Singh**, Rohit Sandal, A. Saxena, B.V. John, and S. Kailas, J. Phys. G. Nucl. Part. Phys. **42**, 095105 (2015).

19. No influence of a N=126 neutron-shell closure in fission-fragment mass distributions.
    A. Chaudhuri, T. K. Ghosh, K. Banerjee, S. Bhattacharya, Jhilam Sadhukhan, S. Kundu, C. Bhattacharya, J. K. Meena, G. Mukherjee, A. K. Saha, Md. A. Asgar, A. Dey, S. Manna, R. Pandey, T. K. Rana, P. Roy, T. Roy, V. Srivastava, P. Bhattacharya, D. C. Biswas, B. N. Joshi, K. Mahata, A. Shrivastava, R. P. Vind, S. Pal, B. R. Behera, and **Varinderjit Singh**, Phys. Rev. C **92**, 041601(R) (2015).
20. Spin distribution measurement for ^{64}Ni + ^{100}Mo at near and above barrier energies.
    Varinderjit Singh, D. Ackermann, S. Antalic, M. Axiotis, D. Bazzacco, L. Corradi, G.De Angelis, E. Farnea, A. Gadea, F.P. Hesberger, M.G. Itkis, G.N. Kniajeva, E.M. Kozulin, T. Martinez, N. Marginean, R. Menegazzo, G. Montagnoli, D.R. Napoli, Yu. Ts.Oganessian, M. Ruan, R.N. Sagaidak, F. Scarlassara, A.M. Stefanini, S. Szilner, and C. Ur, EPJ Web of Conferences **86**, 00053 (2015).
21. Fission excitation function for ^{19}F + ^{194,196,198}Pt at near and above barrier energies.
    Varinderjit Singh, B.R. Behera, Maninder Kaur, A. Jhingan, P. Sugathan, Santanu Pal, Davinder Siwal, M. Oswal, K.P. Singh, S. Goyal, A. Saxena, and S. Kailas, EPJ Web of Conferences **86**, 00052 (2015).
22. Study of the shell effect on nuclear dissipation via neutron multiplicity measurement.
    Varinderjit Singh, B. R. Behera, Jhilam Sadhukhan, and Santanu Pal, EPJ Web of Conferences **66**, 03080 (2014).
23. Study of the effect of shell closure on the nuclear dissipation.
    V. Singh, B.R. Behera, M. Kaur, D. Siwal, S. Goyal, P. Sugathan, K.S. Golda, A. Jhingan, A. Kumar, A. Saxena, R.K. Bhowmik and S. Kailas, EPJ Web of Conferences **17**, 16014 (2011).
24. Level density parameter around A ~ 50-110 nuclei.
    Maninder Kaur, Meenu Thakur, **Varinderjit Singh**, Gulzar Singh, and B. R. Behera, AIP Conf. Proc. **1524**, 190 (2013).
25. Effect of fissility in fission time scales for ^{16,18}O + ^{194,198}Pt systems.

Rohit Sandal, B. R. Behera, **V. Singh**, A. Kumar, G. Singh, K. P. Singh, M. Kaur, K. S. Golda, A. Jhingan, P. Sugathan, M. B. Chatterjee, R. K. Bhowmik, S. Mandal, S. Kalkal, D. Siwal, S. Goyal, E. Prasad, K. Mahata, A. Saxena, and Santanu Pal, AIP Conf. Proc. **1524**, 167 (2013).

26. Polarization measurements and high spin structure in ^{131}Ba.
    Navneet Kaur, A. Kumar, G. Mukherjee, Amandeep Singh, **Varinderjit Singh**, Rohit Sandal, Rajbir Kaur, B. R. Behera, K. P. Singh, G. Singh, H. P. Sharma, Suresh Kumar, M. K. Raja, P. V. Madhusudhan Rao, S. Muralithar, R. P. Singh, Rakesh Kumar, N. Madhavan, C. R. Praharaj, and Z. Naik, AIP Conf. Proc. **1524**, 109 (2013).
27. Fission fragment mass and angular distribution in ^{6,7}Li+^{235,238}U reactions
    S. Santra, A. Parihari, N. L. Singh, B. K. Nayak, B. R. Behera, K. Mahata, K. Ramachandran, **Varinderjit Singh**, A. Pal, R. Chakrabarti, S. Appannababu, R. Tripathi, S. Sodaye, P. Sugathan, A. Jhingan, E. Prasad, K. S. Golda, D. Patel, and S. Kailas, EPJ Web of Conferences **63**, 02016 (2013).
28. Effect of N/Z in pre-scission neutron multiplicity for ^{16,18}O + ^{194,198}Pt systems
    Rohit Sandal, B.R. Behera, **Varinderjit Singh**, Maninder Kaur, A. Kumar, G. Singh, K.P. Singh, P. Sugathan, A. Jhingan, K.S. Golda, M. B. Chatterjee, R. K. Bhowmik, Sunil Kalkal, D. Siwal, S. Goyel, S. Mandal, E. Prasad, J. Sadhukhan, K. Mahata, A. Saxena, and Santanu Pal, EPJ Web of Conferences **66**, 03006 (2014).
29. Effect of shell structure on neutron multiplicity of fissioning systems ^{220,222,224}Th nuclei
    Savi Goyal, S. Mandal, Akhil Jhingan, P. Sugathan, Santanu Pal, B. R. Behera, K. S. Golda, Hardev Singh, Sunil Kalkal, **Varinderjit Singh**, Ritika Garg, Davinder Siwal, Maninder Kaur, Mansi Saxena, Suresh Kumar, S.Verma, M. Gupta, Subinit Roy and R. Singh, EPJ Web of Conferences **86**, 00013 (2015).
30. Spin distribution as a probe to investigate the dynamical effects in fusion reactions
    Maninder Kaur, B.R. Behera, Gulzar Singh, **Varinderjit Singh**, N. Madhavan, S. Muralithar, S. Nath, J. Gehlot, G. Mohanto, Ish Mukul, Davinder Siwal, Meenu Thakur, Kushal Kapoor, Priya Sharma, Akhil Jhingan, T. Varughese, Indu Bala, M.B. Chatterjee, B.K. Nayak and A. Saxena, EPJ Web of Conferences **86**, 00026 (2015).
31. To Investigate the Dissipation in the Fission of ^{220,222,224}Th Nuclei via Pre-Scission Neutron Multiplicity Measurements

Savi Goyal, S. Mandal, Akhil Jhingan, P. Sugathan, Santanu Pal, B. R. Behera, K. S. Golda, Hardev Singh, Sunil Kalkal, **Varinderjit Singh**, Ritika Garg, Davinder Siwal, Maninder Kaur, Mansi Saxena, Suresh Kumar, S. Verma, M. Gupta, Subinit Roy, and R. Singh, JPS Conf. Proc. 6, 030108 (2015).

II. Contribution to International Conference, Symposia and Workshop:

1. Neutron multiplicity measurements for $^{19}F + ^{194,198}Pt$ systems at high excitation energy to understand the fission dynamics.

   Varinderjit Singh, B. R. Behera, Rohit Sandal, A. Kumar, G. Singh, K. P. Singh, S. Mandal, D. Siwal, P. Sugathan, A. Jhingan, K. S. Golda, M. B. Chatterjee, R. K. Bhowmik, K. Mahata and S. Kailas, DAE-BRNS Int. Symp. on Nucl. Phys., Bombay (India) **54**, 344 (2009).
2. Fission fragment mass distribution at high excitation energies for $^{16,18}O + ^{194,198}Pt$ systems.

   Rohit Sandal, B. R. Behera, **Varinderjit Singh**, A. Kumar, G. Singh, K. P. Singh, S. Mandal, S. Kalkal, D. Siwal, M. Saxsena, S. Goyal, E. Prasad, P. Sugathan, A. Jhingan, K. S. Golda, R. P. Singh, R. K. Bhowmik, M. B. Chatterjee, K. Mahata, S. Santra, and A. Saxena, DAE-BRNS Int. Symp. on Nucl. Phys., Bombay (India) **54**, 350 (2009).
3. High spin structure of ^{130}Ba.

   Amandeep Singh, Navneet Kaur, A. Kumar, **Varinderjit Singh**, Rohit Sandal, Rajbir Kaur, B. R. Behera, K. P. Singh, G. Singh, A. Shukla, H. P. Sharma, Suresh Kumar, M. Kumar Raja, P. V. Madhusudan Rao, S. Muralithar, R. P. Singh, Rakesh Kumar, N. Madhvan and R. K. Bhowmik, DAE-BRNS Int. Symp. on Nucl. Phys., Bombay (India) **54**, 84 (2009).
4. Excitation Energy Systematics of the Effective Single Particle Level Densities in Pre-equilibrium Processes in (n, p) Reactions at 14.8MeV Incident Energies.

   Gulzar Singh, H. S. Hans, Ashok Kumar, Gurpreet Singh, B. R. Behera, Rohit Sandal, **Varinderjit Singh** and K. P. Singh, DAE-BRNS Int. Symp. on Nucl. Phys., Bombay (India) **54**, 386 (2009).
5. Investigation of fission barriers for compound nuclei with neutron number ≥ 126.

   Varinderjit Singh, B. R. Behera, Maninder Kaur, N. Madhavan, S. Nath, J. Gehlot, G. Mohanto, A. Jhingan, I. Mukul, T. Varughese, J. Sadhukhan, Santanu Pal, S. Goyal, A. Kumar, K. P. Singh, S. Santra, A. Saxena and S. Kailas, DAE-BRNS Int. Symp. on Nucl. Phys., Bombay (India) **58**, 538 (2013).

6. Evaporation residues spin distribution for ^{16}O+ ^{64}Zn and ^{32}S+ ^{48}Ti systems.
   Maninder Kaur, B.R. Behera, Gulzar Singh, **Varinderjit Singh**, N. Madhavan, S. Muralithar, S. Nath, J. Gehlot, G. Mohanto, Ish Mukul, Davinder Siwal, Meenu Thakur, Kushal Kapoor, Priya Sharma, Akhil Jhingan, T. Varughese, Indu Bala, B.K. Nayak, A. Saxena, and M.B. Chatterjeev, DAE-BRNS Int. Symp. on Nucl. Phys., Bombay (India) **58**, 436 (2013).
7. Probing dissipation effects via evaporation residue excitation function for the $^{16,18}O$ + ^{198}Pt reactions
   Rohit Sandal, B. R. Behera, N. Madhavan, S. Nath, J. Gehlot, A. Jhingan, K. S. Golda, H. Singh, **V. Singh**, A. Kumar, M. Kaur, G. Kaur, P. Sharma, S. Mandal, S. Verma, E. Prasad, K. M. Varier, A. M. Vinodkumar, A. Saxena and Santanu Pal, DAE-BRNS Int. Symp. on Nucl. Phys., Bombay (India) **58**, 528 (2013).
8. Searching the effects of N = 126 in hot fusion reactions with mass ~ 200 region
   E. Prasad, P. V. Laveen, N. Madhavan, S. Nath, J. Gehlot, K. M. Varier, A. Jhingan, A. M. Vinodkumar, A. Shamlath, B. R. S. Babu, B. R. Behera, Rohit Sandal, **Varinderjit Singh**, Jhilam Sadhukhan, Santanu Pal and S. Kailas, DAE-BRNS Int. Symp. on Nucl. Phys., Bombay (India) **58**, 534 (2013).

III. Contribution to national Conference, Symposia and Workshop:

1. Novel Techniques for Preparation of Thin Self Supporting Platinum Targets using Evaporation Techniques.
   Varinderjit Singh, S. R. Abhilash, B. R. Behera and D. Kabiraj, DAE-BRNS Symp. on Nucl. Phys. Pillani (India) **55**, 730 (2010).
2. Effect of shell closure on neutron multiplicity.
   Varinderjit Singh, B. R. Behera, D. Siwal, S. Goyal, Maninder Kaur, P. Sugathan, Golda K. S., A. Jhingan, A. Kumar, A. Saxena, R. K. Bhowmik and S. Kailas, DAE-BRNS Symp. on Nucl. Phys. Pillani (India) **55**, 320 (2010).
3. Effect of shell closure on nuclear dissipation at high excitation energy using neutron multiplicity as a probe.
   Varinderjit Singh, B. R. Behera, Maninder Kaur, Davinder Siwal, Jhilam Sadhukhan, S. Goyal, P. Sugathan, K. S. Golda, A. Jhingan, S. Santra, A. Saxena, S. Pal, R. K. Bhowmik, M.

B. Chatterjee and S. Kailas, DAE-BRNS Symp. on Nucl. Phys. Visakhapatnam (India) **56**, 484 (2011).

4. Evaporation residue excitation function measurement for $^{19}F + ^{194,198}Pt$ reactions.

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