FACULTY MEMBER ACADEMIC PROFILE

1. **Name of the Faculty member:** Dr. SUBHADIP NATH
2. **Designation:** Assistant Professor in Physics (W.B.E.S.)
3. **Qualification:** M.Sc. (University of Kalyani);
   Ph.D. (University of Kalyani)
4. **Specialization:** Condensed Matter Physics
5. **E-mail address:** subha.31connect@gmail.com
6. **Date of Joining in W.B.E.S.:** 26.02.2015
7. **Date of Joining in this College:** 26.02.2015
8. **Total Teaching experience in College level:** 3+ years
9. **Research interests:** High Temperature Superconductivity, Electron-Phonon Interactions, Density Functional Theory, Graphene and its Allotropes, Graphene Nano-Ribbons
10. **Title of thesis (Ph.D.) with year:** "A Study on some aspects of High temperature Superconductivity using Hubbard Model and it's variants" (Awarded in March, 2017)
11. **Research guidance:** Nil
12. **Research Projects (Completed and ongoing):** Nil
13. **List of publications:**

A) Published papers in Journals:

1. "Finite Temperature Properties of the 2D Hubbard Model extended by Next-Nearest-Neighbor Hopping Interaction", **S. Nath** and N. K. Ghosh, *Indian Journal of Physics*, **2012**, 86(5), 351-356 [ISSN 0973-1458; **IF: 1.41**] .
2. "On-site and Inter-site Electron–Phonon Interaction in 2D Hubbard Model", **S. Nath**, N. S. Mondal and N. K. Ghosh, *Physica*, **2013**, B412, 83-86 [ISSN 0921-4526; **IF: 1.386**].
3. "Thermodynamics of the Frustrated 2D Hubbard Model", **S. Nath*** and N.K. Ghosh, *Journal of Superconductivity and Novel Magnetism*, **2014**, 27, 1347-1352 [ISSN 1557-1939; **IF: 1.180**].
4. "Ground-State Properties of the Frustrated 2D Quarter-Filled Hubbard Model", **S. Nath*** and N. K. Ghosh, *Journal of Superconductivity and Novel Magnetism*, **2014**, 27, 2871-2877 [ISSN 1557-1939; **IF: 1.180**].
5. "Interplay between Electron-Phonon Interaction and Hubbard Repulsion: An Exact Approach", **S. Nath***, N. S. Mondal and N. K. Ghosh, *Journal of Superconductivity and Novel Magnetism*, June, **2015**, 28, 1687-1692 [ISSN 1557-1939; **IF: 1.180**].
6. "Phonon-Mediated Electron-Phonon Interaction in Hubbard-Holstein Model", **S. Nath*** and N. K. Ghosh, *Journal of Low Temperature Physics*, January, **2016**, 182, 1-12 [ISSN 0022-2291; **IF: 1.300**].
7. "Electron-Phonon Interaction in the presence of Strong Coulomb Repulsion", **S. Nath***, N. S. Mondal and N. K. Ghosh, *Journal of Superconductivity and Novel Magnetism*, January, **2018**, 31, 29-35 [ISSN 1557-1939; **IF: 1.180**].

8. "Relevance of inter-site Coulomb repulsion on high-Tc superconductivity within t-J-V model", P. Pal, K. Roy, **S. Nath*** and N. K. Ghosh, *Chinese Journal of Physics*, March, **2018**, 56, 958-964 [ISSN 0577-9073; **IF: 0.515**].
9. "Hole pairing and ground state properties of high-Tc superconductivity within the t-t′-J-V model", K. Roy, P. Pal, **S. Nath***, N. K. Ghosh, *The European Physical Journal B*, April, **2018**, 91, 64-1-64-9 [ISSN 1434-6028; **IF: 1.461**].

B) Conference Proceedings:

1. "Electron phonon interaction in high-Tc superconductors", **S. Nath**, N.S. Mondal, S.K. Bhowmick, and N.K. Ghosh, *Proceedings of the 'International Conference on Recent Trends in Applied Physics and Material* Science*'*, AIP Conf. Proc., **2013**, 1536, 325-326.
2. "Bipolaron by inter-site electron-phonon interaction", N.S. Mondal, **S. Nath**, S. Bose, and M. Paul, *Proceedings of the '57th DAE Solid State Physics Symposium 2012'*, AIP Conf. Proc., **2013**, 1512, 810-811.
3. "Electron phonon interaction in Hubbard model", **S. Nath**, N.S. Mondal, N.K. Ghosh, and S.K. Bhowmick, *Proceedings of the '57th DAE Solid State Physics Symposium 2012'*, AIP Conf. Proc., **2013**, 1512, 1084-1085.
4. "Ground state properties of the frustrated Hubbard model", **S. Nath**, N.K. Ghosh, S.K. Bhowmick, and N.S. Mondal, *Proceedings of the 'International Conference on Recent Trends in Applied Physics and Material Science'*, AIP Conf. Proc., **2013**, 1536, 1093-1094.
5. "Interplay between Electron-Phonon Interaction and Hubbard Repulsion: Bipolaron Formation", **S. Nath**, N.S. Mondal, and N.K. Ghosh, *Proceedings of the '59th DAE Solid State Physics Symposium 2014'*, AIP Conf. Proc., **2015**, 1665, 090022-1-090022-3.
6. "Superlight Bipolarons in High T_c Superconductors", **S. Nath**, N.S. Mondal, K. Roy and N.K. Ghosh, *Proceedings of the '59th DAE Solid State Physics Symposium 2014'*, AIP Conf. Proc., **2015**, 1665,130031-1-130031-3.
7. "Small Superlight Bipolarons within t-J_p model", K. Roy, **S. Nath** and N.K. Ghosh, *Proceedings of the 'International Conference on Condensed Matter and Applied Physics (ICC 2015)'*, AIP Conf. Proc., **2016**, 1728, 020019-1-020019-4.
8. "Interplay between on-site electron-phonon interaction and inter-site Coulomb repulsion", **S. Nath**, N.S. Mondal, K. Roy and N.K. Ghosh, *Proceedings of the '*60*th DAE Solid State Physics Symposium 2015'*, AIP Conf. Proc., **2016**, 1731, 090032-1-090032-3.
9. "High-T_c Superconductivity: The t-J-V Model and its Applications", K. Roy, P. Pal, **S. Nath** and N.K. Ghosh, K. Roy, P. Pal, **S. Nath** and N.K. Ghosh, *Proceedings of the '*60*th DAE Solid State Physics Symposium 2015'*, AIP Conf. Proc., **2016**, 1832, 130024-1-130024-3.
10. "Hole Pairing and Thermodynamic Properties of the Two Dimensional Frustrated t-J model", K. Roy, P. Pal, **S. Nath** and N.K. Ghosh, *Proceedings of the '62nd DAE Solid State Physics Symposium 2017'*, AIP Conf. Proc., **2018**, 1942, 130012-1-130012-3.
11. "On some ground state characteristics of the t-J-V model", P. Pal, K. Roy, **S. Nath** and N.K. Ghosh, *Proceedings of '2nd International Conference on Condensed Matter and Applied Physics (ICC 2017)'*, AIP Conference Proceedings, **2018**, 1953, 120003-1-120003-4.

14. **Membership of Learned Societies/ Editorial Boards, etc.:** Nil
15. **Patents:** Nil
16. **Awards:** CSIR-NET (thrice), Gate 2009
17. **Other notable activities:** Nil

18. A) Participation in Seminars/Symposia/Conferences/Workshops:

1. **Presented a paper** entitled "*Numerical studies on High Temperature Superconductors using Hubbard Mode*l" in the **National Conference** '*Condensed Matter Days 2010*', organized by Department of Physics, University of Kalyani from **25th-27th August, 2010**.
2. **Presented a paper** entitled "*Thermodynamic properties of the 2D extended Hubbard model*" in the **National Conference** '*Condensed Matter Days 2011*', organized by Department of Physics, Gauhati University from **24th-26th August, 2011**.
3. **Participated** in the **International level** '*56th DAE- Solid State Physics Symposium*', organized by SRM University, Kattankulathur, Tamil Nadu on 19th-23rd December, 2011.
4. **Presented a paper** entitled "*Pairing Susceptibility and Hole dynamics in the extended 2D Hubbard model*" in the UGC sponsored Second **National Seminar** on '*Recent Trends in Condensed Matter Physics including Laser Applications (SNSCMPLA-2012)*', organized by Department of Physics, University of Burdwan on **22-23rd March, 2012**.
5. **Presented a paper (Oral presentation)** entitled "*Electron-Phonon Interaction in Presence of Inter-site Coulomb Repulsion*" in the **National Conference** on '*Emerging Trends in Condensed Matter Physics and Material Science*', organized by Department of Physics, University of Kalyani on **18-19th March, 2016**.
6. **Presented a paper** entitled "*Interplay Between Inter-site Electron-Phonon Interaction and Inter-site Coulomb Repulsion*" in the **National Seminar** on '*Recent Trends in Condensed Matter Physics including Laser Applications (NSCMPLA-2017)*', organized by Department of Physics, University of Burdwan on **8-9th March, 2017**.

B) Participation in OP/RC:

Participated in the UGC sponsored **Orientation Programme** (OP-119) organized by the UGC-HRDC, University of Calcutta from **17th July to 12th August, 2017**.