Name of the faculty: UJJWAL LAHA

Designation: PROFESSOR

Qualification: Ph. D. (Nuclear Physics)

Area of Interest: Scattering theory; Mathematical physics; Supersymmetric Quantum Mech.

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CURRICILUM VITAE

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Present address: Department of Physics, NIT Jamshedpur, Res: C-20/F, NIT Campus, NIT Jamshedpur-831014

EDUCATIONAL QUALIFICATION:

Sl. No.	Degree	Board/University	Year	Percentage
1	Ph. D.	Visva-Bharati University	1988	
2	M. Sc.	Visva-Bharati University	1984	69.7
3	B. Sc. (Hons)	Visva-Bharati University	1982	64.2

Ph. D. Thesis topic: *Some studies in scattering by Coulomb-modified nuclear potential*

Research interests: Quantum scattering theory, Mathematical physics, Supersymmetric Quantum mechanics

Research awards/fellowships received: DAE Junior research fellow; CSIR senior research Fellow

International Refereed SCI/SCOUPUS Journals :

National and international Journals

1. ** ñ*Double Laplace transform of the Coulomb Green function*ò (B. Talukdar, U. Laha and S. R. Bhattaru) J. Phys. A: Math. Gen. **18**, L359 (1985).
2. ñ*On the Lippmann-Schwinger equation off the energy shell*ò (B. Talukdar, U. Laha and G. C. Sett) J. Phys. G:Nucl. Phys. **12**, L25 (1986).
3. ñ*Ladder operator relations for Hypergeometric functions*ò (U. Laha, C. Bhattacharya and B. Talukdar) J. Phys. A: Math. Gen. **19**, L473 (1986).
4. *ñ*Green's function for motion in Coulomb-modified separable nonlocal potentials*ò (B. Talukdar, U. Laha and T. Sasakawa) J. Math. Phys. **27**, 2080 (1986).

5. ñ*Relativistic Compton profiles for rare gases*ò (J. Dutta, U. Laha, S. Mukhopadhayay and B. Talukdar) Chem. Phys. Lett. **128**, 305 (1986).

6. ñ*L-shell x-ray energy shifts for an additional vacancy in the M-shell*ò (J. Bhattacharya, U. Laha and B. Talukdar) J. Phys. B: At. and Mol. Phys. **20**, 1725 (1987).

7. ñ*Equivalent potentials for a nonsymmetric nonlocal interaction*ò (G. C. Sett, U. Laha and B. Talukdar) Pramana-J. Phys. **28**, 325 (1987).

8. ñ*Hamiltonian hierarchy and the Hulthen potential*ò (U. Laha, C. Bhattacharya K. Roy and B. Talukdar) Phys. Rev. **C 37**, 588 (1988).

9. ñ*Model for x-ray energy shifts for additional atomic vacancies*ò (J. Bhattacharya, U. Laha and B. Talukdar) Phys. Rev. **A 37**, (1988).

10. ñ*Studies in inelastic x-ray scattering by atomic electrons*ò (J. Dutta, B. Talukdar and U. Laha) J. Chem. Phys. (1988).

11. ñ*On bound state wave functions for hydrogen atom*ò (C. Bhattacharya U. Laha and B. Talukdar) Physics Teacher, April-June, **116**, (1988).

12. ñ*Phase-function method for Coulomb-distorted nuclear scattering*ò (G. C. Sett, U. Laha and B. Talukdar) J. Phys. A: Math. Gen. **21**, 3643 (1988).

13. ñ*Phase-function method for elastic* $\alpha - \alpha$ *scattering*ò (U. Laha, N. Haque, T. Nandi and B. Talukdar) Z. Phys. A, **332**, 305 (1989).

14. *ñ*Transform of the Coulomb Green by the form factor of the Graz potential*ò (U. Laha, B. J. Roy and B. Talukdar) J. Phys. A: Math. Gen. **22**, 3597 (1989).

15. ñ*Studies in K-shell x-ray energy shift for a 2p spectator vacancy*ò (J. Bhattacharya, B. Talukdar and U. Laha) Z. Phys. D, **14**, 107 (1989).

16. ***ñ***Integral representation of the Jost function*ò (B. Talukdar, U. Laha and U. Das) Phys. Rev. **A 43**, 1183 (1991).

17. ***ñ***Half-shell T-matrix for Coulomb-modified separable potential*ò (U. Laha, and B. Talukdar) Praqmana-J. Phys. **36**, 289 (1991).

18. ñ*Phase-function method for Hulthen-modified separable potential* ò (U. Laha, A. K. Jana and T. Nandi) Praqmana-J. Phys. **37**, 387 (1991).

19. ñ*On the solution of Volterra integral equation*ò (U. Laha, and B. Kundu) Bull. IAPT **11**, 334 November (1994).

20. ñ*On the solutions for Coulomb and Coulomb-like problems*ò (U. Laha) Bull. IAPT **15**, 208 July (1998).

21. ñOn the solution of relativistic Schrödinger type equation for confining *potential*ò (U. Laha) App. Sc. Periodical, vol. **V**, 1 February (2003).

22. *****ñ*Off-shell Jost solution for scattering by a Coulomb field*ò (U. Laha, and B. Kundu) Phys. Rev. **A 032721** (2005).

23. ñ*Energy values for light quark system in the ultra-relativistic limit*ò (U. Laha) Ind, J. Pure & App. Phys. **43**, 469 (2005).

24. *****ñ*An integral transform of the Coulomb Green's function and off-shell scattering*ò (U. Laha) J. Phys. A: Math. Gen. **38**, 6141 (2005).

25. *****ñ*On the integral representations of Jost function and Coulomb off-shell Jost solution*ò (U. Laha) Praqmana-J. Phys. **67**, 357 (2006).

26. *****ñ*Off-shell Jost solution for a Coulomb-like potential*ò (U. Laha) Phys. Rev. **A 012710** (2006).

27. ñ*A simple method for solution of time-independent Schrödinger with confining potential*ò (U. Laha, and B. Kundu) Phys. Edu. **26**, 35 (2009).

28. *ñ*An integral transform of Green's function, Off-shell Jost solution and T-matrix for Coulomb-Yamaguchi potential in coordinate representation*ò (U. Laha) Praqmana-J. Phys. **72**, 457 (2009).

29. *ñ*On the s-wave Jost solution for Coulomb-distorted nuclear potential*ò (U. Laha, and B. Kundu) Turkish J. Phys. **34**, 149 (2010).

30. *ñ*Off-shell Jost Solutions for Coulomb and Coulomb-like Interactions in all partial waves*ò (U. Laha and J. Bhoi) J. Math. Phys. **54**, 013514 (2013).

31. ñ*Hamiltonian hierarchy and n-p scattering*ò (J. Bhoi and U. Laha) J. Phys. G: Nucl. Part. Phys. **40**, 045107 (2013).

32. ñ*Thermal conductivity of bad conductors revisited*ò (U. Laha and J. Bhoi) Int. J. of Phys. And Math. Sc. **3**, 40 (2013).

33. *ñ*An integral transform of Coulomb Green's function via Sturmian representation and off-shell scattering*ò (U. Laha and J. Bhoi) Few-body System (2013) Doi: 10.1007/s00601-013-0726-x.

34. *ñ*Integral transform of the Coulomb Green's function by the Hankel function and off-shell scattering*ò (U. Laha and J. Bhoi) Phys. Rev. C **88**, 064001 (2013).

35. ñ*On the nucleon-nucleon scattering phase shifts through supersymmetry and factorization*ò Pramana-J. of Phys. (U. Laha and J. Bhoi) **81**, 959 (2013).

36. ñ*Nucleon–nucleon scattering in the light of supersymmetric quantum mechanics*ò

Pramana-J. of Phys. (J. Bhoi, U. Laha and K. C. Panda) **82**, 859 (2014).

37. ñ*Comparative study of the energy dependent and independent two-nucleon interactions-A supersymmetric approach*ò (U. Laha and J. Bhoi) Int. J of Modern Phys. E **23**, 1450039 (2014).

38. *ñ*Integral transforms and their applications to scattering theory*ò (J. Bhoi and U. Laha) Int. J of Applied Phys and Math. **4**, 386 (2014).

39. ñ*Higher partial wave potentials from supersymmetry inspired factorization and nucleon-nucleus elastic scattering*ò (U. Laha and J. Bhoi) Phys. Rev. C **91**, 034614 (2015).

40. ñ*Two nucleon Hulthen type interactions for few higher partial waves*ò Pramana-J. of Phys. (U. Laha and J. Bhoi) **84**, 555 (2015).

41. ñ*Supersymmetry generated Jost functions and nucleon-nucleon scattering phase shifts*ò (J. Bhoi and U. Laha), Physics of Atomic Nuclei, **78**, 831 (2015).

42. *"Nucleon-nucleon potentials and computation of scattering phase shifts"* (J. Bhoi and U. Laha) Indonesian J. of Applied Physics **5**, 73 (2015).

43. ñ*Nucleon-nucleon scattering phase shifts via supersymmetry and the phase function method*ò (J. Bhoi and U. Laha) Braz. J Phys. **46**, 129 (2016).

44. *ñ*On and off-shell Jost functions and their integral representations*ò (J. Bhoi and U. Laha), Pramana Journal of Physics, **86**, 947 (2016) DOI: 10.1007/s12043-015-1130-5.

45. ñ*Parameterization of nuclear Hulthen potentials*ò (U. Laha and J. Bhoi), Phys. Of Atomic Nuclei **79**, 62 (2016).

46. ñ*Elastic scattering of light nuclei through a simple potential model*ò (J. Bhoi and U. Laha) Phys. Of Atomic Nuclei **79**, 210 (2016).

47. ñ*Nucleon-nucleon scattering by the Hulthen potential*ò (J. Bhoi and U. Laha) J of Nucl. Engg. & Technology **6**, No. 2, 17 (2016).

48. ñ*Supersymmetry inspired low energy α-p elastic scattering phases*ò (J. Bhoi and U. Laha) Theoretical and mathematical phys. **190**, 69-76 (2017); DOI 10.1134/S0040577917010056.

49. ñ*Hulthen potential model for α-α and α-He^3 elastic scattering*ò (J. Bhoi and U. Laha) Pramana-J of Physics **88**:42 (2017).

50. *"Laplace transforms of the Hulthén Green's function and their applications to potential scattering*ò (U. Laha, S. Ray, S. Panda, J. Bhoi) Theoretical and mathematical phys. **193**, 1498-1507 (2017).

51. ñ*Localization of a nonlocal interaction*ò (U. Laha, S. Das, and J. Bhoi) Turkish Journal of Physics **41**, 447-462 (2017).

52. ñ*Volterra integral equation-factorization method and nucleus-nucleus elastic scattering*ò (U. Laha M. Majumder and J. Bhoi) PRAMANA-J of Physics (in Press).

53. ñ*Parameterization of the nuclear Hulthén potential for the nucleus-nucleus elastic scattering*ò (J. Bhoi, R. Upadhyay and U. Laha) Communications in Theoretical Physics (in Press).

54. *"Higher partial wave energy dependent and independent two-nucleon interactions via supersymmetry formalism*ò (J. Bhoi, M. Majumder and U. Laha) Indian J of Pure and Applied Physics (in Press).

*** Thes works are cited in the book entitled "Coulomb-modified nuclear scattering-*off the energy shell*" By Ujjwal Laha [Lambert Academic Publishing, Saarbrücken, Germany, 2010]**

Papers submitted in SCI Journals:

1. ñ*The Fredholm determinant for Hulthén distorted nonlocal separable potential - application to* $\alpha - \alpha$ *elastic scattering*ò (U. Laha, S. Ray and J. Bhoi) Russian J of Mathematical Physics
2. ñ*Off-shell Jost solution for the Hulthén potential*ò (U. Laha) Few-Body system.
3. ñ*Potentials and phase shifts for nucleon-light nuclei systems*ò (J. Bhoi and U. Laha) PRAMANA-J. Physics.
4. *"Nucleon-nucleon and nucleus-nucleus scattering by energy-dependent potential*ò (U. Laha) Iranian J of science and Technology, Transaction A.

5. ñ*NUCLEAR HULTHÉN POTENTIAL AND THE SCATTERING PHASE SHIFTS FOR* $\lambda = 3$ *"* (U. Laha) Current Science.

National/International conferences:

1. ñ*On a problem in exotic atom*ò (S. R. Bhattaru, U. laha and B. Talukdar) Fifth national Workshop on Atomic Physics, TIFR, Bombay (1984).
2. ñ*On Schrödinger equation with Relativistic kinematics*ò (B. Talukdar and U. Laha) **International Conference on Nuclear Physics**, BARC, Dec. 27-31, Bombay (1984).
3. ñ*On Relativistic Quarkonium Model*ò (U. Laha, G. C. Sett and B. Talukdar) **International Conference on Nuclear Physics**, BARC, Dec. 27-31, Bombay (1984).
4. ñ*Anomalous behaviour of the Saito repulsive core*ò (G. C. Sett, U. Laha, C. Bhattacharya and B. Talukdar) Symposium on Nuclear Physics, Rajasthan University, Dec. 16-20, 28B, 154 (1985).
5. ñ*Coulomb-distorted Nuclear Green's function and its application*ò (S. R. Bhattaru, U. Laha and B. Talukdar) Symposium on Nuclear Physics, Rajasthan University, Dec. 16-20, 28B, 154 (1985).
6. ñ*Relativistic Compton profiles for rare gases*ò (J. Dutta, U. Laha, S. Mukhopadhyaya and B. Talukdar) Symposium on Atomic and Molecular Physics, IICB, Kolkata (1987).
7. ñ*Inversion problem for Saito potentials*ò (B. Talukdar, G. C. Sett and U. Laha) **XI th International Conference on Few-body Physics**, Tokyo and Sendai, Japan (1987).
8. ñ*Some studies in scattering by Coulomb-modified nuclear potentials*ò (U. Laha)- **Invited Paper** Symposium on Nuclear Physics, BARC, Bombay (1987).
9. ñ*Hulthen-modified nuclear Green's function and its application*ò (U. Laha) **International Nuclear Physics Symposium**, Dec. 18-22, BARC, Bombay (1995).
10. ñ*Off-shell Jost solution for Coulomb-modified nuclear potential*ò (U. Laha) DAE-BRNS Symposium on Nuclear Physics, BHU, Dec. 6-10, (2004)
11. ñ*Nucleon-nucleon scattering in the light of Supersymmetric quantum mechanics*ò (J. Bhoi and U. Laha) National Conference on Nuclear Physics, Sambalpur University, Odisha, 01-03 March (2013).

Project: Modernization of B. Tech. (Physics) Lab. M-148, MHRD, 15 Lakhs, 2004

Conference/Workshop organized: Nil

Ph. D. Supervised: One; ñ*Some studies in on-and off-shell effects of the Coulomb-nuclear potential in quantum scattering*ò as Co-Supervisor; Jhasketan Bhoi; April 2016

Member of Editorial board of the Journals: Nil

Teaching experience:

Position held	Institution	From	To	Nature of job
Lecturer	National Institute of Technology Jamshedpur	05/09/1988	26/03/1996	Teaching & Research
Assistant Professor	National Institute of Technology Jamshedpur	27/03/1996	26/03/2004	Teaching & Research
Professor	National Institute of Technology Jamshedpur	27/03/2004	Till date	Teaching & Research

Awards, Honours & Recognitions: Nil

Reviewer of International Journals & Books: Mathematical Reviews; McGraw-Hill Education

Member of professional academic bodies: Nil

Invited talks/Seminars given: Symposium on Nuclear Physics, BARC, Bombay, Dec 27-31, 1987; National Conference on Nuclear Physics, Sambalpur University, Odisha, 01-03 March, 2013

Any other Information:

1. ** ñ*Double Laplace transform of the Coulomb Green function*ò (B. Talukdar, U. Laha and S. R. Bhattaru) J. Phys. A: Math. Gen. **18**, L359 (1985).
2. $$ñ*Higher partial wave potentials from supersymmetry inspired factorization and nucleon-nucleus elastic scattering*ò (U. Laha and J. Bhoi) Phys. Rev. C **91**, 034614 (2015).

   **** This work is cited in the book entitled "Charged Particle Interactions- Theory and Formulas" By H.van Haeringen [The Coulomb Press, Leyden, The Netherlands, 1985].**

   $$ The Division of Nuclear Physics of the APS requested the authors to provide a Keyword Abstract to forward the data of this article to National Nuclear Data Center (NNDC) at Brookhaven National Laboratory for inclusion in the Nuclear Science References (NSR) database. These are included in NSR database at BNL.