

Curricular Vitae

NAME: DR. SATYABRATA SAHOO

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DATE OF BIRTH: 6th February, 1965

NATIONALITY: Indian

Category: General

MARITAL STATUS: Married

EDUCATIONAL ATTAINMENTS:

Ph.D. in Physics (August,1995) from Jadavpur University, INDIA under the supervision of ***Prof. T.K.Mitra***, Dept. of Theo. Phys.,Indian Association for the Cultivation of Science, Jadavpur, Calcutta, India.

THESIS: A Critical Study of Bipolaronic States.

M.Sc. in Physics (1987) with 1st class from University of Calcutta,INDIA.

SPECIALIZATION: Solid State Physics.

B.Sc. in Physics (1985) with 1st class from University of Calcutta,INDIA.

Minors: Mathematics, Chemistry.

Qualified Joint National Test for JRF conducted by CSIR-UGC,1989

ACCOMPLISHMENT: *Junior Research Fellowship* and *Senior Research Fellowship* of C.S.I.R. (Council of Scientific and Industrial Research), **INDIA.**

POSTDOCTORAL RESEARCH :

Research Associate in Indian association for the Cultivation of Science, Jadavpur, Kolkata-75, INDIA(August 1995- July 1997).

Research Associate in Institute of Atomic and Molecular Sciences, Academia Sinica, Taipei, Taiwan 106, R.O.C. (April' 1999- August'2000).

Visiting Scientist in Institute of Atomic and Molecular Sciences, Academia Sinica, Taipei, Taiwan 106, R.O.C. (June' 2001- July'2001).

Visiting Scientist in Institute of Atomic and Molecular Sciences, Academia Sinica, Taipei, Taiwan 106, R.O.C. (June' 2002- August'2002).

Visiting Scientist in Institute of Atomic and Molecular Sciences, Academia Sinica, Taipei, Taiwan 106, R.O.C. (October' 2005- December'2005).

Visiting Scientist in Institute of Atomic and Molecular Sciences, Academia Sinica, Taipei, Taiwan 106, R.O.C. (August' 2008- September'2008).

PRESENT STATUS: *Principal*, Dhruba Chand Halder College, Dakshin Barasat, South 24 Parganas,W.B.,INDIA

Teaching Experience-20 years

Area of specialization: CONDENSED MATTER PHYSICS

Title of Thesis: A CRITICAL STUDY OF BIPOLARONIC STATES

Teaching/ Research/ Industrial Experience (Most recent first)

Sl. No.	Previous Positions held	Employer/ Organization	Period/ Durati
1.	Principal	Dhruba Chand Halder College, Dakshin Barasat, South 24 Parganas, W.B.,	26.09.2012 to till date
2.	Associate Professor	RAIDIGHI COLLEGE, Raidighi,South 24 Parganas,W.B	01.08.2009 to 25.09.2012
3.	Reader	RAIDIGHI COLLEGE, Raidighi,South 24 Parganas,W.B	01.08.2006 to 31.07.2009

4.	Sr. Lecturer	RAIDIGHI COLLEGE, Raidighi, South 24 Parganas, W.B	01.08.2001 to 31.07.2006
5.	Lecture	RAIDIGHI COLLEGE, Raidighi, South 24 Parganas, W.B	01.08.1997 to 31.07.2001
6.	Research Associate	Indian Association For The Cultivation of Science, Jadavpur, Kolkata-32	26.08. 1995- 31.07. 1997
7.	SRF	Indian Association For The Cultivation of Science, Jadavpur, Kolkata-32	02.11.1991 to 25.08.1995
8.	JRF	Indian Association For The Cultivation of Science, Jadavpur, Kolkata-32	02.11.1989 to 01.11.1991

RESEARCH ACOMPLISHMENT:

a)Computational Biophysics

Several Statistical and mathematical analysis have been performed on the biological DNA sequences. *The study of molecular evolution and different* measures of biological sequence similarity and the statistics of sequence comparison have been performed. A number of algorithms have been developed for sequence comparison and finding tRNAs. Nonrandom amino acid sequences in proteins have also been studied in order to understand gene regulation. Compositional complexity such as homopolymers and short period sequence repeats have also been investigated to study the molecular structure and dynamics of these sequences

b) Condensed matter Physics & Computational nanophysics

A numerical technique namely, *Complex Absorbing Potential Method* has been developed to study the resonating states of the **quantum dots** in polar semiconductor,

A theoretical study on **the ground and the excited state** properties of *quantum dots* in polar semiconductor is done systematically.

c) Computational Atomic Physics

An alternative approach (*Complex Absorbing Potential Method*) to study the resonating state for the many-electron atomic system has been developed and has been applied to hydrogen, **Lithium and Sodium**.

Research Project completed:

1. **The DNA Sequence Analysis for Gene Identification:** A Minor Research project approved by UGC (PSW-060/05-06(ERO) dated 21/3/2006).
2. **In Silico Detection of Potential tRNA Genes and tRNA-like Structures in Genomic DNA Sequences:** A Minor Research Project approved by UGC (PSW-056/11-12(ERO) dated 20/10.2010).

Ph.D. Thesis guided:

1. **Computational Approaches For Gene Expression And Identification Of Highly Expressed Genes in Diverse Genomes: A Comparative Analysis** by Shibsankar Das :awarded Ph. D. (Sc.) degree at Jadavpur University, INDIA

LIST OF PUBLICATION

[50] Satyabrata Sahoo, Shibsankar Das and Ria Rakshit; Codon usage pattern and predicted gene expression in *Arabidopsis thaliana* ; 2019, Gene X,2,100012

[49] Uttam Roy Mandal, Shib Sankar Das, Brajadulal Chattopadhyay, Satyabrata Sahoo Comprehensive Study of Composite tRNA Genes in Archaeal Genome ; Research Journal of Life Sciences, Bioinformatics, Pharmaceutical and Chemical Sciences; 2018, 4(5),823

[48] Uttam Roymandal, Shib Sankar Das, Riya Rakshit and Satyabrata Sahoo; Suppressive Variants of Selenocysteine Trna in the Complete Genome of Methanopyrus kandleri AV19;2018, J. Pharmacogenomics Pharmacoproteomics , 9(2),179.

[47] Ria rakshit and **Satyabrata Sahoo**; In Silico Prediction of Gene expression Based on Codon Usage : A mini Review ;2017, Journal of Investigative Genomics 4(2),63

[46] Shibsankar Das, Brajadulal Chottopadhyay, **Satyabrata Sahoo**; Comparative Analysis of Predicted Gene Expression among Crenarchaeal Genomes;2017, Genomics & Informatics 1591,38.

[45] **Satyabrata Sahoo** and Shibsankar Das,Analyzing Gene Expression and Codon Usage Bias in Metallosphaera Sedula; 2014, J. Bioinf. Intell. Control 3, 72-80.

[44]**Satyabrata Sahoo** and Shibsankar Das; Analysing gene expression and codon usage bias in diverse genomes using a variety of models;2014, Current Bioinformatics 9(5),102-112.

[43]Smarjit Das, Sanga Mitra, **Satyabrata Sahoo** and Jayprokas Chakrabarti; Viral/Plasmid captures in Crenarchaea; 2014, Journal of Biomolecular Structure and Dynamics, 32(4),546-554.

[42] Shibsankar Das, Uttam Roymondal, Brajadulal Chottopadhyay, **Satyabrata Sahoo**; Gene expression profile of the cynobacterium synechocystis genome;2012, Gene 497,344.

[41] Sanga Mitra, Smarjit Das,**Satyabrata Sahoo**, Chandana Sinha and Jayprakash Chakrabarti; Phylogeny derived from homodimeric endonuclease correlates with its pre-RNA substrates;2011, Adv. Biosc. and Biotech. 2,117

[40] Smarjit Das, Sanga Mitra, **Satyabrata Sahoo**, and Jayprakash Chakrabarti; Novel Hybrid Encodes both Continuous and Split tRNA Genes;2011, J.Bio. Struc. & Dynm. 28,1

[39]Smarjit Das, Ritwik Mukherjee, **Satyabrata Sahoo**, Rachna Thakkar and Jayprakash Chakrabarti; Structural Clones of UAG Decoding RNA;2009, J.Bio. Struc. & Dynm. 27,1

[38] **Satyabrata Sahoo** and Y.K.Ho; On the appearance of a Cooper minimum in the photoionization cross sections of the plasma-embedded Li atom; 2010,JQSRT.111,52.

[37] **Satyabrata Sahoo** and Y.K.Ho;Photoionization of the excited He^{*} atom in Debye plasma; 2009, Research letters in Physics. 832413,1.

[36] Partha Sarathi Das and **Satyabrata Sahoo**; Bipolaronic excitations of interacting electron (hole) gas in one dimensional lattice model; 2009, *Physica B*, 404, 4225.

[35] Shibanskar Das, Uttam Roymondal, and **Satyabrata Sahoo**; Analyzing gene expression from relative codon usage bias in *Yeast* genome : a statistical significance and biological relevance; 2009, *Gene* 443, 121.

[34] Uttam Roymondal, Shibskar Das, and **Satyabrata Sahoo**; Predicting Gene Expression Level from Relative Codon Usage Bias : An Application to *Escherichia Coli* Genome; 2009, *DNA Research* 16, 13.

[33] **S. Sahoo** and Y.C.Lin and Y.K.Ho; 2008, Quantum confined hydrogenic impurity in a spherical quantum dot under the influence of parallel electric and magnetic field; *Physica E* 40, 3107.

[32] **S. Sahoo** and Y.K.Ho; 2006, Photoionization of Li and Na in Debye plasma environments; *Physics of Plasmas* 13, 1, 2006.

[31] I. Mukhopadhyaya, A. Som, **S. Sahoo**; Word organization in Coding DNA : a mathematical model; 2006, *Theory in Biosciences* 125, 1

[30] J. Chakrabarty, Z. Ghosh, B. Mallick, S. Das, **S. Sahoo** and H. Singh; 2006, tRNA⁻ isoleucine-tryptophan composite gene; *BBRC* 339, 37.

[29] J. Chakrabarty, B. Mallick, **S. Sahoo**, Z. Ghosh, S. Das; 2005, Identity elements in Archeal tRNA; *DNA Research* 12, 235

[28] **S. Sahoo** and Y.K.Ho; 2005, Field induced energy shifts and widths of low lying states of Na atom in Parallel Magnetic and Electric Fields. : *Chin J. Phys* 43, 58

[27] S. Das, J. Chakrabarti, Z. Ghosh, **S. Sahoo** and B. Mallick ; A new measure to study phylogenetic relations in the brown algal order, Ectocarpales : The Codon Impact Parameter ; 2005, *Journal of Biosciences*, 30(5) 101-111.

[26] J. Chakrabarti, S. Sahoo, B. Mallick S. Das and Z. Ghosh: 2005, Algorithm for pattern recognition in nano-sized archaea, *Indian J. Phys.*(2005), 79(6), 559-562.

[25] S. Sahoo and Y.K. Ho; 2004, Anomalous stark effect in the ground state of the confined hydrogen atom in a spherical quantum dot: *Phy. Rev. B* 69, 165323

[24] A. Som, S. Sahoo and I. Mukhopadhyay and J. Chakrabarti; 2003, Scaling Violations in coding DNA. ; *European Physical Letters* 62, 271.

[23] A. Som, S. Sahoo and J. Chakrabarti; 2003, Coding DNA enquences: Statistical Distributions; *Mathematical Biosciences* 183, 49.

[22] S. Chattopadhyay, S. Sahoo, W.A. Kanner and J. Chakrabarti; 2003, Pressures in Archeal Protein Coding Genes: A Comparative Study: *Comparative and Functional Genomics* 4, 56.

[21] S. Sahoo and Y.K. Ho; 2002, Resonances of Hydrogen and Lithium Atoms in Parallel Magnetic and Electric Fields : *Phys. Rev. A* 65, 15403

[20] S. Sahoo and Y.K. Ho; 2000, Determination of Resonance Energy and Width Using th Method of Complex Absorbing Potential: *Chin. J. Phys.* 38, 127.

[19] S. Sahoo and Y.K. Ho; 2000, Complex Absorbing Potential Method to Study the Stark Effect in Hydrogen and Lithium : *J. Phys. B.* 33, 2195.

[18] S. Sahoo and Y.K. Ho; 2000, Stark Effect on the Low-lying Excited States of the Hydrogen and the Lithium Atoms: *J. Phys. B.* 33, 5151.

[17] S. Chattopadhyay, A. Som, S. Sahoo and J. Chakrabarti ; 2000, Order and Fluctuation in DNA sequences: *Indian J. Phys.* 74B, 1.

[16] S.Tarafdar, P.Nandy, A.Som, **S.Sahoo** and J.Chakrabarti and N.Nandy;1999, Self-similarity and scaling exponent for DNA walk in two and four dimensions;**Indian J.Phys**73B(2),337.

[15]**S.Sahoo**,A.Bandyopadhyay,T.K.Mitra and N.C.Sil; 1999, The ground state energy of the Helium isoelectronic series;**Indian J. Phys.**73B(1), 25.

[14]A.Bandyopadhyay,**S.Sahoo** and N.C.Sil;1999, The calculation of the ground state energy of the Positronium negative ion Ps; **Indian. J.Phys.** 73B(2),337.

[13]**S.Sahoo;1999**, Formation of the ground and the excited states of the Frohlich bipolaron; **Phy. Rev. B**60, 10803.

[12]**S.Sahoo;1998**,Energy levels of the Frohlich polaron in a spherical quantum dot; **Phys. Lett. A**238,390.

[11]**S.Sahoo;1998**,The strong coupling polaron in reduced dimensionality;**J.Phys.C**10,1999.

[10]**S.Sahoo;1996**,The ground state description of Frohlich polaron in symmetric quantum dot within the framework of LLP-H approach;**Z.Phys.**B101,97.

[9]**S.Sahoo,1996**, On the formation and stability of the Frohlich bipolaron in two and three dimensional system;**Nuovo Cimento D**18,849.

[8]**S.Sahoo**, A.Bandyopadhyay, T.K.Mitra and N.C.Sil ; 1996,Helium atom revisited;**Indian J.Phys.** 70B, 93

[7]**S.Sahoo;1995**, The regular perturbation theory on the stability of the strong coupling bipolaron; **Journal of Phys. C**7,4457.

[6] **S. Sahoo;1994**, A variational calculation on the stability of two centre Frohlich bipolaron; **Phys.Lett.A195**.

[5] **S. Sahoo and T.K.Mitra;1994**, On the formation of an optical mode induced single centre bipolaron; **Journal of Phys. Soc. of Japan 63,4102**.

[4] **S. Sahoo and T.K.Mitra; 1993**, Molecular Orbital approach to the Frohlich bipolaron; **Phys. Rev. B48,6019**.

[3] **S. Sahoo and T.K.Mitra;1993**, Canonical transformation, perturbation theory and strong coupling Landau-Pekar polaron revisited; *Indian J. Phys.* 67A, 303.

[2] **S. Sahoo and T.K.Mitra;1993**, Molecular orbital bipolarons and oxide superconductors, *Indian J. Phys.* 67A, 425.

[1] **S. Sahoo and T.K.Mitra;1992**, Bipolaron formation in polar solids; *Indian J .physics*, 66A, 277.

PARTICIPATION IN CONFERENCES, SYMPOSIA, WORKSHOP ETC.

- a. Participated in UGC sponsored National Seminar on 'Quantum Information: Theory and Computer Science' organized by Department of mathematics, Jogesh Chandra Choudhury College, Kolkata in collaboration with Netaji Nagar Day College, Kolkata on 14th -15th February,2012.
- b. Participated in 'An Indo-Singapore Joint Workshop: Role of computational biology in advancing modern medicine', organized by Centre of Applied mathematics and Computational Science SINP, Kolkata on 2nd-3rd Feb,2012
- c. Participated in UGC sponsored National Seminar on 'The Physics behind Electronics/Optoelectronics and their applications' organized by Department of Physics, Sammilani Mahavidyalaya, Kolkata in collaboration with Centre for Pedagogical studies in Mathematics, Kolkata on 1st and 2nd Dec,2011.
- d. Participated in UGC sponsored National Seminar on 'Concepts and challenges in Astronomy and Astrophysics' organized by Department of Physics, Sunderban Mahavidyalaya, Kakdwip, South 24 Parganas in collaboration with M.P.Birla Institute of Fundamental Research, Kolkata on 24th 25th Nov,2011 .
- e. Participated in the "Fourth Workshop on genetic Epidemiological methods for Discussion on Complex human Traits" held on February 23-28,2009 ,organized by TCG-ISI Centre for Population Genomics, Kolkata, India and Univ. of Pittsburgh,USA.

- f. Paper Presented: Hybrid tRNA gene: A bridge between continuous and split tRNAs, 2010, EMBO/EMBL Symposium: Non-Coding Genome, p-113, organized by EMBL, Heidelberg, held in, Heidelberg, Germany, 13-16 Oct, 2010.
- g. Paper presented: Annotation of putative pyrrolysine tRNAs: Correlation with in-frame usage of amber codon UAG; S. Das, S. Sahoo, R. Mukherjee and J. Chakrabarti, 2007, 22nd International tRNA Workshop, p-75, held in Uppsala, Sweden, November 1-6, 2007.
- h. Paper presented: Identity determinants for AARS and intron splicing endonucleases; B. Mallik, Z. Ghosh, J. Chakrabarti, S. Das, and S. Sahoo, 2007, International Conference on Chromosomes to Neurons (ICCTN), p37, organized by Dept. of Biophysics, Molecular Biology & Genetics, University of Calcutta and SINP, Kolkata, held on January 12-14, 2007.
- i. Paper presented: New Proline-tRNA gene in *Methanococcus jannaschii*; Z. Ghosh, B. Mallik, J. Chakrabarti, S. Das, and S. Sahoo, 2007, International Conference on Chromosomes to Neurons (ICCTN), p58, organized by Dept. of Biophysics, Molecular Biology & Genetics, University of Calcutta and SINP, Kolkata, held on January 12-14, 2007.
- j. Paper presented: Substrate identities for tRNA-splicing-Endonucleases and AARS in Eukaryotes; B. Mallik, Z. Ghosh, J. Chakrabarti, S. Das, and S. Sahoo, 2006, International Conference on Bioinformatics-2006 (InCoB 2006), p232, held on December 18-20, 2006.
- k. Paper presented: tRNAs of nonstandard amino acids in *Sulfolobus acidocaldarius*; Z. Ghosh, B. Mallik, J. Chakrabarti, S. Das, and S. Sahoo, 2006, International Conference on Bioinformatics-2006 (InCoB 2006), p422, held on December 18-20, 2006.
- l. Paper presented: tRNA-scape in archaea; Sahoo, S., Mallick, B., Ghosh, Z., Das, S. and Chakrabarti, J. (2005). 21st International tRNA Workshop, p-168, organized by IISc., Bangalore, held on December 2-7, 2005.
- m. Paper presented: Non-canonical introns in tRNA genes of archaea; J. Chakrabarti, B. Mallick, Z. Ghosh, S. Sahoo, and S. Das, (2004). 2nd RNA Group meeting, Dec 21-22, 2004, organized by Biophysics Division, Saha Institute of Nuclear Physics, Calcutta.
- n. Paper presented: Distribution of Palindromic sSequences in Lambda; Z. Ghosh, S. Sahoo, G. Purokayastha, J. Chakrabarti, (2004), in the symposium on 'Bioinformatics For Genome Analysis', organized by Bose Institute, Calcutta during January 29-30, 2004.
- o. Participated in the 'Workshop on Statistical Computational Genomics', organized by Indian Statistical Institute, Calcutta during December 11-20, 2001.
- p. Participated in XIIIth national conference on 'Atomic and Molecular Physics' held in Indian Association for the Cultivation of Science, from January 16-20, 2001. Contributed paper entitled, 'Complex Absorbing Potential Method to find the Resonance in Hydrogen Atom in External Magnetic field.
- q. Participated in the International conference on 'Few Body Problem in Physics' held in National Taiwan University, Taipei, Taiwan, from 6-10 March, 2000. Presented Poster entitled, 'Complex Absorbing Potential Method to study the Stark effect in Hydrogen and Lithium'.
- r. Participated in national Symposium-cum-workshop on trends in 'Bioinformatics' organized by Bose Institute, from March 24-27, 1998. Poster presented entitled 'Scaling exponent in a DNA walk model and implications for coding and non-coding region'.
- s. Participated in national conference on 'Theoretical physics today' organized by Indian Association for the Cultivation of Science from April 22-24, 1998. Posters presented entitled, (i) Self-similarity and scaling exponent for DNA walk in two and four dimensions, (ii) The calculation of the ground state energy of the positronium negative ion Ps.
- t. Participated in School on Complex Systems, organized by Indian Association for the Cultivation of Science from January 30-February 2, 1995.
- u. Participated in SERC School, Puri, 23rd January-12th February, 1994.

- v. Participated in the workshop on Electronic Structures of Random Alloys, organized by S.N.Bose National Centre for Basic Sciences from November 20-December 5, 1990.

Refresher and Orientation Course

a. Participated in UGC sponsored Refresher Course in Physics organized by Academic Staff College, University of Calcutta, from November 06-November 25, 2006.

b. Participated in UGC sponsored Refresher Course in Physics organized by Academic Staff College, University of Calcutta, from July 08-July 28, 2005.

c. Participated in UGC sponsored Orientation Programme in Physics organized by Academic Staff College, University of Calcutta, from August 30-September 27, 2001.