Curriculum Vitae

Name: CHANCHAL CHAUDHURI

Affiliation/ Contact Address:

: Dept. of Physics, University of Gour Banga (UGB)
NH-34 (Near Rabindra Bhawan), Mokdumpur,
Malda-732103
Email: cchanchal@yahoo.com

Educational Qualifications:

Post Graduate: M. Sc. Physics
Specialization - Nuclear Physics
University of Calcutta, Kolkata, India

National Level Test Award: Graduate Aptitude Test in Engineering (GATE)- 1990

Ph. D. Thesis (Science): Experimental and Theoretical Studies on Charge Transfer Processes in Doubly/Multiply Charged Ion-Neutral Collisions at Low Energies.
Jadavpur University, Calcutta, India

Ph. D. Supervisor: **Professor T. K. Rai Dastidar (Late)**
Department of Materials Science
Indian Association for the Cultivation of Science (IACS)
Kolkata - 700032, INDIA

Work Place for Ph. D. Thesis: Dept. of Materials Sciences, IACS, Kolkata - 32, INDIA

Postdoctoral Research Supervisor: **Professor Yuan. T. Lee, Nobel Laureate**
(Feb, 1999 - June, 2006)
Academia Sinica Felloship :2002 -2002
Academia Sinica Fellowship:2002 -2004
January 01, 2006 - June 30, 2006: Project Associate Scientist, National Synchrotron Radiation Research Center (NSRRC), Hsinchu, Taiwan.

Assistant Research Professor and Postdoctoral Fellow (July 01, 2006 - June 30, 2008) - Awarded (Selected) under "*Distinguished Scholars for NCKU Project for Promoting Academic Excellence and Developing World Class Research Centers*".
Host Faculty and Collaborator in NCKU: Professor Chin-Chun Tsai
Dept. of Physics
National Cheng Kung University, TAIWAN

Ramanujan Fellowship Award: PI of Ramanujan Project (28 July, 2008) and Endorsement to pursue my research work offered by Dept. of Physics, C.U., Kolkata.

***Present Position (27 January, 2012- to date)*: Professor and Head**
Department of Physics, UGB, Malda,WB.

Number of International publications in peer reviewed prestigious journals: ***36***
Number of International publications in peer reviewed prestigious journals: ***02***
Number of Conference/Symposium Attended & Presented Poster/Talk: ***23***

TEACHING Activities

Teaching in the Dept of Physics, University of Calcutta, Kolkata:

Four Years Honorary Teaching (4th. Semester of 2008/09 - 2011/12):
M. Sc. Special Paper: Advanced Laser Physics - II, (No. of classes - 25 of each 1 hour).

Practical Laboratory Set-up and Teaching in the Dept of Physics, UGB

Building up of Practical Laboratories (Particularly, General Physics and Optics Labs) including all infrastructures.

PG Physics (2 years course) : Mathematical Physics, Atomic Physics
Molecular Physics, Experimental methods in Physics
General Physics, Practical , Special Theory of Relativity
Nuclear Physics, Particle Physics, Statistical Mechanics
and Optics Practical.

Ph. D. Students and Manpower Trained:

(i) Saswati Dey has joined for her Ph. D. Thesis work under my supervision (as a *Joint Supervisor*) and Dr. B. Ray, Reader, Dept. of Phys. C.U. (as *Principal Supervisor*).
Ph. D. Registration in the University of Calcutta, Kolkata, in 08.12, 2011.

(ii) Sreoshi Dutta has joined for her Ph. D. Thesis work (theory) under the supervision of Dr Chanchal Chauduri (*Principal Supervisor*) and Dr. K. Rai Dastidar, Professor, IACS, (Retd.) Kolkata, (*Joint Supervisor*). Registration to be done shortly

(iii) Mr. Mabud Hossain and Mrs. Soma Mitra, Ph. D. students of Dr. B. Ray, shared their time to work to learn the cold/ultracold atom experiment under my Ramanujan project.

Present Research work: (1) Experiment on Cold/ultracold Rubdium atomic vapor

(2) Investigations of BEC-Vortices formed in a coupled atomic-molecular system by solving nonlinear Modified Gross-Pitaevskii Equation in 2D and parametric variation.

Future Plan of Work: Collaboration in the field of Astrophysics, Cosmology and General Relativity to investigate the astrophysical objects by simulations and data analysis of experimental observations.

List of Publications in Different Fields:

Publications on Ion-Molecule Collision Experiments/Theory (IACS, Calcutta, INDIA)

1. Theoretical study of dynamic electron correlation in He^{2+} -He charge transfer collisions using a 27-state close-coupled calculation with a diabatic molecular basis.
Chanchal Chaudhuri, *PMC Physics B* 2009, **2**:2,
Article URL *http://www.physmathcentral.com/1754-0429/2/2*

2. Identification of single charge transfer channels in N_2^{+2} - N_2 collisions by translational energy spectroscopy.
C. Chauduhri, K.K.Das, Krishna Rai Dastidar and T.K.Rai Dastidar, *Molecular Physics*, **102**, 765 (2004).

3. Charge transfer in He^{++} -He collisions in an intense laser field:
A theoretical close-coupled study using a diabatic molecular representation.
C. Chaudhuri and T.K.Rai Dastidar, *Nuovo Cimento*, **20 D**, 749 (1998).

4. Theoretical study of single and double charge transfer in He^{2+} -He collisions at kilo-electron-volt energies in a diabatic molecular expansion.
C. Chaudhuri, S. Sanyal and T.K.Rai Dastidar, *Phys. Rev. A*, **52**, 1137 (1995).

5. Use of a diabatic molecular expansion in studies on electron capture by He^{+2} ions in helium at keV energies.
C. Chaudhuri, S. Sanyal and T. K. Rai Dastidar, *Pramana- J. Phys.*, **43**, 175 (1994).

Publications on Infra-red Spectroscopy of Protonated Mixed-Water Clusters (IAMS, Taipei, Taiwan):

6. Comparative Studies of $H^+(C_6H_6)(H_2O)_{1,2}$ and $H^+(C_5H_5N)(H_2O)_{1,2}$ by DFT Calculations and IR Spectroscopy
C. Chaudhuri, C.-C. Wu, J. C. Jiang and H.-C. Chang, ***Rapid Communication***: *Aust. J. Chem.*, **57**, 1153 (2004).

7. Structral Isomerism and Competitive Proton Solvation between Methanol and Water in $H^+(CH_3OH)_m(H_2O)_n$, $m + n = 4$.
C.-C. Wu, C. Chaudhuri, J. C. Jiang, Y. T. Lee and H.-C. Chang, *J. Phys. Chem.*,**108**, 2859 (2004).

8. Microsolvation of the Lithium ion by Methanol in the Gas Phase.
C.-C. Wu, Y.-S. Wang, C. Chaudhuri, J. C. Jiang, and H.-C. Chang, *Chem. Phys. Letts.*, **388**, 457 (2004).

9. Infrared spectra and isomeric structures of hydroxide ion-water clusters $OH^-(H_2O)_{1-5}$: a comparison with $H_3O^+(H_2O)_{1-5}$.
C. Chaudhuri, Y.-S. Wang, J. C. Jiang, Y. T. Lee, H. C. Chang and G. N. Schatteburg, *Molecular Physics*, **99**, 1161 (2001). (**INVITED PAPER**)
<*Cited by 12. Cited in ScienceXpress*, 23 January, page1, *Science*, **299**, 1367 (2003).>

10. Hydration-Induced Conformation Changes of Protonated 2,4-Pentanedione in the Gas Phase.
C. -C. Wu, C. Chaudhuri, J. C. Jiang, Y. T. Lee and H. -C. Chang, *Molecular Physics*, **101**, 1285 (2003).

11. Hydrogen Bond Rearrangements and Interconversions of $H^+(CH_3OH)_4H_2O$ Cluster Isomers.
J. C Jiang, C. Chaudhuri, Y. T. Lee and HC Chang, *J. Phys. Chem. A*, **106**, 10937 (2002).

12. On the First Overtone Spectra of Protonated Water Clusters $[H^+(H_2O)_{3-5}]$ in the Free-OH Stretch Region.
C. -C. Wu, C. Chaudhuri, Y. T. Lee and H. -C. Chang, *J. Chinese Chemical Soc.*, **49**, (No.5), 769 (2002).

13. Characterization of Protonated Formamide-Containing Clusters by Infrared Spectroscopy and Ab Initio Calculations: II. Hydration of Formamide in the Gas Phase.
C. Chaudhuri, J. C. Jiang, C.-C. Wu, X. Wang, and H.-C. Chang, *J. Phys. Chem. A.*, **105**, 8906 (2001).

14. Characterization of Protonated Formamide-Containing Clusters by Infrared Spectroscopy and Ab Initio Calculations: I. O-Protonation.
C.-C. Wu, J. C. Jiang, I. Hahndorf, C. Chaudhuri, Y. T. Lee and H.-C. Chang, *J. Phys. Chem. A.*, **104**, 9556 (2000).

15. Identification of $CH_3OH_2^+$ and H_3O^+centered cluster isomers in $H^+(CH_3OH)_4H_2O$ by vibrational predissociation spectroscopy.
C. Chaudhuri, J. C. Jiang, X. Wang, Y. T. Lee and H. C. Chang, *J. Chem. Phys.* (***Communications***), **112**, 7279 (2000).

Publications on Crossed Molecular Beam Reaction Dynamics and Photochemical Reaction Dynamics (NSRRC, Hsinchu, Taiwan):

16. Exploring the dynamics of reaction N+SiH4 with crossed molecular-beam experiments and quantum-chemical calculations
I-Chung Lu, Wei-Kan Chen, Chanchal Chaudhuri, Wen-Jian Huang, Jim J. Lin, and Shih-Huang Lee, *J. Chem. Phys.* **129**, 174304, (2008).

17. Investigations of Silicon-Nitrogen Hydrides from Reaction of Nitrogen Atoms with Silane: Experiments and Calculations
Wei-Kan Chen, I-Chung Lu, Chanchal Chaudhuri, Wen-Jian Huang, and Shih-Huang Lee, *J. Phys. Chem. A.*, **112**, 4879, (2008).

18. Observation of photochemical C-N bond cleavage in CH_3N_3: A new photochemical route to cyclic-N_3
Chris Larson, Yuanyuan Ji, P. C. Samartzis, J. J. Lin, T. -T, Ching, Chanchal Chaudhuri, S. H. Lee and Alec M. Wodtke, *J. Phys. Chem. A.*, **112**, 1105, (2008).

19. Investigations of oxysilanes from the crossed-beam reaction of atomic oxygen with silane using tunable vacuum-ultraviolet ionization

Chanchal Chaudhuri, I-Chung Lu, Jim J. Lin and Shih-Huang Lee, *Chem. Phys. Lett.*, **444**, 237 (2007).

20. Development of a stable source of atomic oxygen with a pulsed high-voltage discharge and its application to crossed-beam reactions
I. C. Lu, W. J. Huang, C. Chaudhuri, W. K. Chen and S. H. Lee, *Rev. Sec. Instru.*, **78**, 083103 (2007).

21. The simplest all-nitrogen ring : Photolytically filling the cyclic N_3 well.

P.C. Samartzis, J.J. Lin, T.T. Ching, C. Chaudhuri, S.H. Lee and A.M. Wodtke, *J. Chem. Phys.* **126**, 041101 (2007).

22. The heat of formation of chlorine-isocyanate and the relative stability of isoelectronic molecules: An experimental and theoretical study
Yuanyuan Ji, Petia Bobadova-Parvanova, Chris Larson, Peter. C. Samartzis, Keiji Morokuma, J. J. Lin, T. T Ching, C. Chaudhuri, S. H. Lee and A. M. Wodtke, *J. Chem. Phys.*, **124**, 241106 (2006).

23. Photodissociation dynamics of vinyl fluoride (CH2CHF) at 157 and 193 nm. distribution of kinetic energy and branching ratios.
S. H. Lee, W. K Chen, C. Chaudhuri, W. -J. Huang, *J. Chem. Phys.*, **125**, 144315 (2006)

24. Collision-free photochemistry of methylazide: Observation of unimolecular decomposition of singlet methylnitrine.
C. Larson, Y. Ji, P. Samartzis, A.M. Wodtke, S.H. Lee, J.J. Lin, C. Chaudhuri, T.T. Ching, *J. Chem. Phys.* **125**, 133302 (2006).

25. Two Photoionization thresholds of N_3 produced by ClN_3 photodissociation at 248 nm: further evidence for cyclic- N_3
Peter. C. Samartzis, J. J. Lin, T. T Ching, C. Chaudhuri, Y. T. Lee, S. H. Lee and A. M. Wodtke, *J. Chem. Phys.*, **123**, 51101 (2005).

26. A complete look at the multi-dissociation channels of propenal photoexcited at 193 nm: branching ratios and distributions of kinetic energy
C. Chaudhuri and S. H. Lee, - *Phys. Chem. Chem. Phys.*, **13**, 7312 (2011).

27. Molecular-beam experiments for photodissociation of propenal at 157 nm and quantum-chemical calculations for migration and elimination of hydrogen atoms in systems C3H4O and C3H3O
C. -H. Chin, Chanchal Chaudhuri, and S. -H Lee, - *J. Chem. Phys.*, **135,** 044301 (2011)

28. Evidence for Synchronous Concerted Three-Body Dissociation of Propenal to C_2H_2+CO+H_2
S. -H. Lee, C. -H. Chin and C. Chaudhuri, - *ChemPhysChem.*,**12,** 753 (2011)*: Communication*.

Publications on Optical-Optical Double Resonance Spectroscopy of Na_2

29. Adiabatic interaction leading to the avoided-crossing between the twins $3^1\Delta_g$ and $4^1\Delta_g$ Rydberg states in Na_2
Thou-Jen Whang, Chanchal Chaudhuri, Wei-Xiang Chen, Ray-Yuan Chang and Chin-Chun Tsai- *J. Phys. Chem. A*, **113**, 4954, (**2009**)

Self Contribution: *Entire experimental raw data analysis and all figuring, establishment of the scientific achievements from the analyzed data and full paper write up.*

30. Observation of the **nd**$^1\Delta_g$ (n=6, 7 and 8) Rydberg states of Na_2 by OODR Spectroscopy: L-uncoupling and Perturbations,
Chanchal Chaudhuri, R. -Y. Chang, C. -C. Tsai, C. -P. Cheng and T. -J. Whang
J. Chem. Phys., **129**, 24303, (**2008**)

31. Observation of the $7^1\prod_g$ state of Na_2 by OODR Spectroscopy
Chanchal Chaudhuri , Ray-Yuan Chang, Wei-Xiang Chen, Wei-Chia Fang, Jun-Ping Cheng, Thou-Jen Whang and Chin-Chun Tsai, *J. Phys. Chem. A*, **111**, 9764, (2007)

32. The third and fourth $^1\Delta_g$ states of Na_2 : a pair of twins
Wei -Xiang, Ray -Yuan Chang, Thou -Jen Whang, C. Chaudhuri and C. -C. Tsai, *Chem. Phys. Letts.* **439**, 29, (2007) (Paper Modified, Revised and Referee Defense)

Publications on Laser Spectroscopy and Cold Rb-Atom Projects

33. Non-linear resonances caused by coherent, optical pumping and saturating effects in presence of three laser fields for 85Rb-D2 transition
M M Hossain, S Mitra, P Poddar, C Chaudhuri, B Ray and P N Ghosh,- J. Physics B, At. Mol. and Opt., **44**, 115501 (2011)

34. Standing wave pump field induced coherent non-linear resonances in rubidium vapour
S. Mitra, M. Hossain, C. Chaudhuri, B. Roy and P. N. Ghosh, - ***Chem. Phys. Letts.*, 513,** 173 (2011)

35. Investigation of quantum coherence effects in a multilevel atom induced by three laser fields
S. Dey, N. Aich, *C. Chaudhuri* and B. Ray, - *Eur. Phys. J. D*, **69**, 43, (2015)

36. A study of the repumping laser and external magnetic field effect on coherent absorption resonance in alkali vapour
S. Dey, N. Aich, S. Mitra, *C. Chaudhuri*, P. N. Ghosh and B. Ray, - *Chem. Phys. Lett.*, **627**, 107-115, (2015)

37. Nonlinear coherent absorption resonance in optically thick medium
Advanced Science Letters
S. Dey, N. Aich, *C. Chaudhuri* and B. Ray, - *Accepted for Publication in the Conference Proceedings(2015)*

38. The basic setup of cold/ultracold atoms has been done in the Dept. of Physics, Univ. of Calcutta, Kolkata, under the Ramanujan Fellowship *and the signature of the 3D-MOT of Rb atomic vapour has been observed.*
Published in the Brochure: *Meeting of all the Ramanujan Fellows of DST held on 4-6 May, 2012, at IISER, Pune, Index: Sl. No. 12, Page: 13-14 (Fig.1. and Fig.2).*

Important Conference/Symposium Attended & Presented Poster/Talk:

1. X. National Conference on Atomic and Molecular Physics
Ch. C. S. University, Meerut, India, (7 -11 March, 1995)
Contributed paper: Identification of some charge transfer channels in N_2^{+2} - N_2 collisions by translational energy spectroscopy (TES) at keV energies.
C. Chauduhri, K.K.Das, Krishna Rai Dastidar, and T.K.Rai Dastidar.

2. Theoretical Physics Today: Trends and Perspectives,
I.A.C.S., Calcutta, India, (22 - 24 April, 1996)
Contributed paper: Identification of some charge transfer channels in N_2^{+2} -N_2 collisions by translational enenrgy spectroscopy (TES) at keV energies
C. Chauduhri, K.K.Das, Krishna Rai Dastidar, and T.K.Rai Dastidar.

3. Attended First and Second SERC School on "Atomic and Molecular Physics" held at IACS, Calcutta and Roorkee University, India, respectively.

4. XX-ICPEAC Contributed papers, Vienna, Austria, 23-29 July 1997,
(a) TH 184 and (b) TH 185, *C. Chaudhuri and T.K.Rai Dastidar*

5. Invited talk on Ph. D. Thesis work at Indian Association for the Cultivation of Science (IACS), Calcutta, India, October, 1998.

6. Talk on Ph. D. Work - IAMS, Academia Sinica, Taipei, Taiwan, April, 1999

7. Studying molecular cluster ions of biological interest in the gas phase',
'*Chinese Chemical Society Conference-2000'* November, *2000*, TaiChung, Taiwan, R.O.C. , C.-C. Wu, J. C. Jiang, C. Chaudhuri, Y. T. Lee and H.-C. Chang,

8. Investigation of Protonated Formamide-Water Clusters by Infrared Spectroscopy and Ab Initio Calculations: II. Hydration of Formamide in Gas Phase, Tata Institute of Fundamental Research, Bombay, INDIA--14th. Feb, 2001.

9. Characterization of Protonated Formamide-Water Clusters by Infrared Spectroscopy and ab Initio Calculations: II. Hydration of Formamide in gas phase
IACS, Calcutta, INDIA - 2nd March, 2001

10. Talk on Ph. D. Work & PDF work IAMS, Academia Sinica, Taipei, Taiwan

11. Investigations on Protonated Mixed-Water Clusters by Ab Initio Calculations and Infrared Vibrational Predissociation Spectroscopy in the gas Phase.

IACS, Calcutta, INDIA - December, 2002.

12. "An Overview and Insights of Crossed Molecular Beam Reaction Dynamics" --- IAMS, Taipei, Taiwan. March, 2004.

13. "An Overview and Insights of Photodissociation Reaction Dynamics" --- IAMS, Taipei, Taiwan. March, 2004.

14. "Tenth Users' Meeting & Workshops", October (28 -29), 2004, NSRRC, Hsinchu, ***Poster:*** 'Study of the Reaction $O+SiH_4$ by Crossed Molecular Beam Technique and Synchrotron Radiation' --- C. Chaudhuri, I. C. Lu, Jim J. Lin and S. H. Lee, Y. T. Lee

15. Annual Report 2003 - 2004: XI Users' Meeting, 25 - 26 October, 2005. ***Poster***: 'Photodissociation Dynamics of Acrolein at 193 nm' C. Chaudhuri, I. C. Lu, Jim J. Lin, Y. T. Lee and S.H. Lee NSRRC, Hsinchu, Taiwan.

16. ***Poster:*** Dynamics of Multiphotodissociation Channels of Acrolein at 193 nm
C. Chaudhuri, I. C. Lu, , Jim J. Lin, S. H. Lee and Y. T. Lee
NSSA-2006, January 18-20, 2006
Dept. of Spectroscopy, IACS, Kolkata, INDIA.

17. ***Poster:*** Experimental and theoretical investigations of the $O(^3P/^1D) + SiH_4$ reaction
Chanchal Chaudhuri, I-Chung Lu, Yao-Chang Lee, Jim Lin, and Shih-Huang

Trends in Chemical Dynamics: From Small Molecules to Biomolecules

December 10 -15, 2006. Hotel Royal, Chiao-Hsi, Yi-Lan County, Taiwan
Website: www.hrjhotel.com.tw/en/main.htm <***Poster Presentation: P-11***>

18. Attended: ***3rd Workshop on Quantum Information Science and Technology***
National Center for Theoretical Science, NCKU, January 09 -11, 2007, TAIWAN

19. Oral Presentation on: Abstract No.: (0NC - 4), Page. 209
"An Observation of the Non-Crossing Rule of the Potential Curves having the Same Symmetry in Na_2"
Physical Society Meeting (R.O.C.), January 23 -25, 2007
National Central University, Chungli, Taiwan
Chair of the Session: Prof. Ite Albert Yu
Dept. of Physics, National Tsing Hua University, Hsinchu, Taiwan.
Email: yu@phys.nthu.edu.tw ; Tel.Ph.No.:886-3-574-2539

20. Conference on Laser Applications in Basic and in Applied Sciences (CLBAS-2009), Dept. of Physics, Visva-Bharati, Santiniketan, Feb.14 -17, 2009.

21. 'International Conference on Cold Ions and Atoms 2010'(ICCIA2010) held on January 18 - 21, 2010 at Shankarpur, West Bengal, INDIA

Poster Title: **Coherent Spectroscopic Measurements and Investigation of Interaction Nature Using Cold Rb Atoms,** (*ICCIA2010*, pp.)
M.M. Hossain, S. Mitra, B. Roy, C. Chaudhuri and P. N. Ghosh

22. "**International Conference on Electronic Structure and Dynamics of Molecules and Clusters"**
IACS, Kolkata, Feb 17 - 20, 2013.