

Bio-data of Prof. Suresh Chandra

September 3, 2009

1. **Name** : **Prof. Suresh Chandra**
F.R.A.S. (London), Mem T.W.A.S. (Italy),
AvH-Fellow (Germany), F.M.A.S. (Pune),
M.N.A.Sc. (Allahabad)
2. **Father's name** : Shri Chiranji Lal Sharma
3. **Date & Place of birth** : July 8, 1949; Amroha (U.P.) India
4. **Nationality** : Indian
5. **Sex; Marital status** : Male; Married
6. **Present/Mailing Address** : **Director**
School of Physics,
S.M.V.D. University,
Katra 182320 (J&K)
Email: suresh492000@yahoo.co.in

Tel. No. (091) 01991-285732
7. **Permanent Address** : III-A/21 Vaishali,
Ghaziabad 201 010, India

9. Academic Qualifications

Examination	Board/Univ.	Year	Subject	Marks	Division
High School	U.P. Board	1966	Hindi, English, Maths., Science, Art (tech.)	66.2%	First
Intermediate	U.P. Board	1968	Hindi, Physics, Maths., Chemistry, English	63.3%	First
B.Sc.	Meerut Univ.	1970	Physics, Chemistry Maths.	70.7%	First
M.Sc.	Meerut Univ.	1972	Physics	64.6%	First
Ph.D.	Meerut Univ.	1977	Physics	-	-

10. Name & Address of the persons who may be consulted about my work

- (i) Prof. Jayant V. Narlikar,
Former Director, IUCAA,
Post Bag 4, Ganeshkhind
Pune 411 007
Email: jayant@iucaa.ernet.in
- (ii) Prof. Dr. W.H. Kegel,
Zentrum für Astronomie und Astrophysik
der Technischen Universität Berlin,
PN 8-1, Hardenbergstrasse 36,
D 10623 Berlin, Germany
Email: kegel@astro.physik.tu-berlin.de
Tel No. 0030 740 71745 (Res.); 0030 314 23783 (Off.)
- (iii) Prof. D.A. Varshalovich
Ioffe Physical-Technical Institute of the Academy of the Sciences of Russia,
Leningrad K-21, Russia
Email: varsh@astro.ioffe.ru
Tel No. 007 812 292 7180
- (iv) Prof. S.P. Khare,
Former & Founder Head, Dept. of Physics, Ch.C.S. Univ., Meerut,
B-99, Shastri Nagar,
Meerut 250 004
Email: spkhare35@gamil.com
Mob. 09897703292

11. Membership of the bodies in scientific institutions and research journals

- (i) member of the **apex body** called the ‘The Council’ of the Inter-University Centre for Astronomy & Astrophysics (IUCAA), Pune - An Autonomous Institution of the UGC, New Delhi, for the period of two years from January 1, 1999 to December 31, 2000. Attended the meeting of the Council on 18.8.99, and on 17.10.2000.
- (ii) have been appointed Associate Member of the Third World Academy of Sciences (TWAS), Trieste, Italy for a period of three years from 26.1.2000. The tenure is likely to be renewed for a period of further three years.
- (iii) member of the Editorial Board of the research journal, New Vision, published by the Swami Ramanand Teerth Marathwada University, Nanded, from September 1998 to March 2000.
- (iv) member of the Scientific Advisory Board of the Centre for Astronomy & Space Technology (CAST), Nanded 431 605 from February 1999 onward.
- (v) member of the Advisory Committee to the UGC – SAP Phase III in Astronomy at the Centre of Advanced Study in Astronomy, Osmania University, Hyderabad vide letter No. 318/F.26/SAP/CAS/AST/UGC/04 dated 3/5 July 2004 of the Dean, Development & UGC Affairs, Osmania University, Hyderabad
- (vi) member of the Working Group in Physics for National Science Digital Library (NSDL) project of the National Institute of Science Communication And Information Resources (NISCAIR) vide letter No. NSDL/WKG-Physics/05 dated 9 August 2005 of the Director of the NISCAIR, New Delhi.

12. Scholarships/Fellowships/Associateships

- (i) have been research scholar (C.S.I.R., New Delhi) from Dec. 1973 to July 1976 in Meerut College, Meerut to work for Ph. D. degree.
- (ii) have been **Alexander von Humboldt Foundation (F.R.G.) Fellow** from April 1980 to July 1981 to work in collaboration of Prof. Dr. G. Elwert in the University of Tübingen (F.R.G.).
- (iii) have been Pool Officer (C.S.I.R., New Delhi) from August 1984 to January 1985 in the Dept. of Physics, Himachal Pradesh University, Shimla.
- (iv) have been Visiting Associate (U.G.C., New Delhi) for the period from 1.4.89 to 31.3.92. Under this scheme I visited
 - (a) U.P. State Observatory, Nainital from 15.6.89 to 14.9.89.
 - (b) Tata Institute of Fundamental Research (TIFR), Bombay from 14.5.90 to 14.8.90.
- (v) have been Associate/Senior Associate/ Visiting Associate of Inter-University Centre for Astronomy and Astrophysics (IUCAA), Pune for the period from 1.7.90 to 31.7.2011. Under this scheme, I visited IUCAA, Pune several times.
- (vi) have been elected Fellow of the Royal Astronomical Society (London) w.e.f. 4 July 2000.
- (vii) have been elected Fellow of the Maharashtra Academy of Sciences w.e.f. 4 November 2000.
- (viii) have been Associate of the Physical Research Laboratory, Ahmedabad for two years from October 2004.

13. Teaching Experience

- (i) As Lecturer in D.N. College, Gulaothi (Univ. of Meerut) from July 1976 to February 1980 (graduate classes).
- (ii) As Pool Officer in the Dept. of Physics, H.P. University, Shimla from August 1984 to January 1985 (postgraduate classes).
- (iii) As Lecturer in the Dept. of Physics, Univ. of Gorakhpur, Gorakhpur from January 1985 to November 1995 (graduate and postgraduate classes).
- (iv) As Reader in Physics, School of Sciences, Indira Gandhi National Open University, New Delhi from November 1995 to June 1998 (distance education).
- (v) As Professor in the School of Physical Sciences, S.R.T.M. University, Nanded 431606 from July 1998 to July 2009 (postgraduate classes).
- (vi) As Professor in the School of Physics, S.M.V.D. University, katra 182320 from August 2009 to onwards (postgraduate classes).

14. Foreign Visits

- (i) As an Alexander von Humboldt Foundation (F.R.G.) fellow in the Univ. of Tübingen (F.R.G.) from April 1980 to July 1981 to work in collaboration of Prof. Dr. G. Elwert, Univ. of Tübingen (F.R.G.). (From 4.2.80 to 31.3.80, I attended language course in Germany for learning German language.)

- (ii) As a Visiting Scientist under a project funded by the Deutsche Forschungsgemeinschaft (F.R.G.) to work with Prof. Dr. W.H. Kegel in the Univ. of Frankfurt/Main (F.R.G.) from July 1981 to August 1984.
- (iii) As a Visiting Scientist under the Scientific Exchange Programme between Indian National Science Academy, New Delhi and the U.S.S.R. Academy of Sciences, Moscow, U.S.S.R. from December 1986 to May 1987 to work in collaboration of Prof. D.A. Varshalovich.
- (iv) As a Visiting Scientist under the Scientific Exchange Programme between Indian National Science Academy, New Delhi and Deutsche Forschungsgemeinschaft, Bonn, Germany to work in collaboration of Prof. Dr. W.H. Kegel in the Univ. of Frankfurt/Main (F.R.G.) from Sept. 1 to Nov. 30, 1993.
- (v) As a Visiting Scientist under the Scientific Exchange Programme between Indian National Science Academy, New Delhi and Deutsche Forschungsgemeinschaft, Bonn, Germany to work in collaboration of Prof. Dr. W.H. Kegel in the Univ. of Frankfurt/Main (Germany) from Feb. 1 to May 31, 1995.
- (vi) As a Visiting Scientist under the Scientific Exchange Programme between Indian National Science Academy, New Delhi and Deutsche Forschungsgemeinschaft, Bonn, Germany to work in collaboration of Prof. Dr. W.H. Kegel in the Univ. of Frankfurt/Main (Germany) from March 31 to June 30, 1999.
- (vii) To participate in the General Assembly of the International Astronomical Union (IAU) held at Manchester (U.K.) during August 7-18, 2000.
- (viii) To participate in the conference on FIRST STEPS IN THE ORIGIN OF LIFE IN THE UNIVERSE held at the Abdus Salam International Centre for Theoretical Physics, Trieste, Italy during September 18 - 22, 2000.
- (ix) As a Visiting Scientist under the Scientific Exchange Programme between Indian National Science Academy, New Delhi and Deutsche Forschungsgemeinschaft, Bonn, Germany to work in collaboration of Prof. Dr. W.H. Kegel in the Technical University, Berlin (Germany) from March 31 to June 30, 2006.
- (x) As a Visiting Scientist of Alexande von Humboldt Foundation, Germany to work in collaboration of Prof. Dr. K.M. Menten in the Max-Palnck-Institu für Radioastronomie, Bonn, (Germany) from January 15 to February 13, 2009.

15. Award

- (i) Our paper entitled FORCE-FREE MAGNETIC FIELDS MAY HAVE A LOSS OF EQUILIBRIUM by Suresh Chandra and Lalan Prasad was awarded Second Prize for the Upper Atmospheric Science during the concluding session of the National Space Science Symposium (NSSS) -1992 on 14 March 1992.
- (ii) have been awarded University Grants Commission, New Delhi Research Award vide letter No. F.30-1/2001(SA-III) dated 23 January 2002 for three years. However, keeping in view the circumstances in the S.R.T.M. University, Nanded, the award was not availed.

16. Research Grants and Schemes

- (i) Got a Financial Assistance No. F.25-1(7155)/77(SR-I) dated 7.2.77 of Rs. 6000/- from the University Grants Commission (UGC), New Delhi for a period from Feb. 1977 to Feb. 1979 for a minor project entitled: Upper Atmospheric Recombination Processes.

- (ii) Got a Financial Assistance No. F.26-1(2342)/86(SR-IV) dated 19.7.86 of Rs.10,000/- from the U.G.C., New Delhi for a period from Nov. 1986 to Nov. 1988 for a minor project entitled: Electron Impact Polarisation of Radiation during Solar Flares.
- (iii) Got a Research Grant No. CST/SERPD/176 dated 25.7.87 from U.P. State Council of Science and Technology, Lucknow, for 2 years, in which one student worked on the project entitled: Energy Equilibrium in Solar Coronal Loops.
- (iv) Got a Financial Assistance No. F.8-6(41)/87(SR-II) dated 14.3.88 of Rs. 10,000/- from the U.G.C., New Delhi for a period from Aug. 1988 to Aug. 1990 for minor project entitled: Pressure Structure in Active Region Loops.
- (v) Got a Research Grant No. 10/2/154 dated 14.3.89 from the Indian Space Research Organization (ISRO), Bangalore in which one student worked on the project entitled: Transfer of Radiation through Interstellar Molecular Clouds.
- (vi) Got a Research Grant No. 3(711)/91-EMR-II dated 12 Sept. 1991 from the Council of Scientific and Industrial Research (CSIR), New Delhi in which one Senior Research Fellow (SRF) worked on the project entitled: Magneto-hydrostatic Equilibrium in Solar Coronal Arcades.
- (vii) Got a Research Grant No. SP/S2/004/94 dated 17.11.95 from the Department of Science and Technology, New Delhi for a project entitled 'Transfer of radiation through the atmosphere of the IRC +10216'.
- (viii) Got a Research Grant No. SR/S2/HEP-17/2003 dated 24.8.2005 from the Department of Science and Technology (DST), New Delhi for a project entitled 'Radiative Transition Probabilities and Anomalous Absorption by Molecules in Cool Cosmic Objects' of Rs. 8,50,200 (Eight lakh, fifty thousand and two hundred).
- (ix) Got a Research Grant from the Indian Space Research Organization (ISRO), Bangalore vide letter No. 10/2/324 dated 6.2.2006 for a project entitled 'Anomalous phenomena in C₃H and C₃D cyclic molecules' of Rs. 7,24,000 (Seven lakh twenty four thousand).
- (x) Got a Research Grant from the University Grants Commission (UGC), New Delhi vide letter No. 36-124/2008 (SR) dated 26 March 2009 as Co-PI for a project entitled 'Ab initio studies of transition metal borides/nitrides' of Rs. 10,94,500 (Ten lakh, ninety four thousand and five hundred).

17. Experience of guiding Research Scholars

Ph.D. students

- (i) Dr. Lalan Prasad has been awarded Ph.D. degree of Gorakhpur University, Gorakhpur on the topic 'Energy Equilibrium in Solar Coronal Loops' in 1996.
- (ii) Dr. Arvind Kumar Sharma has been awarded Ph.D. degree of Jamia Millia Islamia, New Delhi on the topic 'Transfer of radiation through the molecular cloud containing cyclopropenylidene' in 1999.
- (iii) Dr. Pramod G. Musrif has been awarded Ph.D. degree of S.R.T.M. University, Nanded on the topic 'Study of anomalous absorption in interstellar formaldehyde molecules' in 2007.
- (iv) Dr. (Mrs.) Shakuntala A. Shinde has been awarded Ph.D. degree of S.R.T.M. University, Nanded on the topic 'Anomalous absorption in cosmic C₅H₂ molecule' in 2007.
- (v) Dr. Shivprasad V. Shinde has been awarded Ph.D. degree of S.R.T.M. University, Nanded on the topic 'Identification of molecules in cool cosmic objects' in 2008.

- (vi) Dr. (Mrs.) N.V. Seshamma has been awarded Ph.D. degree of S.R.T.M. University, Nanded on the topic 'Electrical Transport Properties of Mixed Ferrites' in 2008
- (vii) Dr. R.M. Dharmkare has been awarded Ph.D. degree on of S.R.T.M. University, Nanded the topic 'Anomalous Phenomena Observed in Some Interstellar Molecules' in 2008
- (viii) Three students are working for their Ph.D. work. Their research work is in progress.

M.Phil. students

- (i) Mr. Ganpat M. Dak has been awarded M.Phil. degree of S.R.T.M. University, Nanded on the topic 'Mean-Field Dtnamo in a Partially Ionized Plasma' in 2009.

18. Experience of guiding students for M.Sc. project

Guided M.Sc. projects, one in 1999-2000, one in 2000-2001, one in 2001-2002, two in 2002-2003, one in 2003-2004, three in 2004-2005, two in 2005-2006, two in 2006-2007 and two in 2007-2008.

19. Experience of administration

- (i) Head of the Department of Physics in D.N. College, Gulaothi 245408 from 1.7.77 to 2.2.80.
- (ii) Coordinator of Physics Discipline (i.e., Head of the Physics Department) in the School of Sciences in Indira Gandhi National Open University (IGNOU), New Delhi 110068 from 1 Nov 1997 to 30 June 1998.
- (iii) Coordinator for the October/November 1999 session exams. of the campus schools of the S.R.T.M. University, Nanded 431606
- (iv) Head of the School of Physical Sciences in S.R.T.M. University, Nanded 431 606 form 1 July 1998 to 20 July 2006.
- (iv) Worked as Chief Superintendent of Oct/Nov 2006 examinations of the university campus of the S.R.T.M. University, Nanded
- (v) Director of the School of Physical Sciences in S.R.T.M. University, Nanded 431606 from 21 July 2006 onward (Letter No. Estt./3/2006-07/1068 dated 21.7.2006.
- (vi) Director of the School of Physics in S.M.V.D. University, Katra 182320 from 03 August 2009 onward

20. Experience of organizing workshops/seminars/refresher course etc.

- (i) Organized a **workshop on Awareness of FORTRAN language** from 28 to 31 October 1998. Teachers from all the Schools of the S.R.T.M. University campus participated in the programme.
- (ii) Organised a **National Seminar on Recent Trends in Physics & Astrophysics** during February 13-14, 1999. Teachers from various colleges affiliated to this university participated in the seminar. Lectures were delivered by distinguished scientists from all over India.
- (iii) Organised a **short term course on Fundamental Aspects of Solid State Physics** during December 16-18, 1999. In the course, the lectures were delivered by Prof. Rahul Pandit and Prof. Chandan Dasgupta of J.N.C.A.S.R., Bangalore. Teachers from the colleges affiliated to the S.R.T.M. University, Nanded, and staff members and students of the School participated in the Seminar.

- (iv) Organised a **short term course on Fundamentals of Astronomy** during Feb. 2 - 5, 2000. Students of B.Sc. Final year from various colleges affiliated to the S.R.T.M. University, Nanded attended the course. Lecturers were given by four staff members of the School of Physical Sciences, S.R.T.M. University, Nanded 431606
- (v) Organised **Introductory School on Astronomy & Astrophysics** sponsored by the Inter-University Centre for Astronomy & Astrophysics (IUCAA), Pune during November 16-20, 2000. Students of B.Sc., M.Sc. and B.E. from various colleges in India and the School of Physical Sciences, SRTM Univ., Nanded participated in the programme.
- (vi) Organised one day **workshop on Concept Centred Experiments** on 15 January 2001. Teachers of Physics from various colleges affiliated to the S.R.T.M. Univ., Nanded participated in the workshop. Lectures and demonstrations of the experiments were given by Prof. A.W. Joshi and his team members.
- (vii) Organised **UGC sponsored Refresher Course in Physics** of Four week during October 1 - 28, 2001. 27 teachers from colleges affiliated to various universities in India attended the course. Expert lectures were delivered by Senior staff members working in universities and research institutions in India.
- (viii) Organised a workshop about how to approach the SET question papers in Physics, during August 8 - 10, 2002. 22 outside participants and 37 students of our School participated in the workshop. The programme was sponsored by the office of the Maharashtra State Eligibility Test (SET), Pune.
- (ix) Organised one day workshop on 20 September 2003 for discussing about M.Sc. Physics courses in the colleges and campus of the S.R.T.M. University, Nanded.
- (x) Organised a workshop about how to approach the SET question papers in Physics, during August 1 - 3, 2004. 19 outside participants and 41 students of our School participated in the workshop. The programme was sponsored by the office of the Maharashtra State Eligibility Test (SET), Pune.
- (xi) Organised Science-Day programme 2005 on 28.2.2005 where teacher of various Schools delivered popular lectures.
- (xii) Organised Raman Conference for Research Students on 4.3.2005 where students of various Schools presented their research work.
- (xiii) Organised one day workshop on 29 June 2005 for discussing about M.Sc. (Previous) Physics courses in the colleges and campus of the S.R.T.M. University, Nanded.
- (xiv) Organised one day programme on 8 August 2005 for Decennial Ceremony of the School of Physical Sciences, S.R.T.M. University, Nanded.
- (xv) Organised a workshop about how to approach the SET question papers in Physics, during January 10 -12, 2006. 21 outside participants and 38 students of our School participated in the workshop. The programme was sponsored by the office of the Maharashtra State Eligibility Test (SET), Pune.
- (xvi) Organised a workshop on Fundamentals of Quantum Mechanics and Astrophysics on dated 20 & 21 December 2006 where Prof. Dr. W.H. Kegel (Germany) along with other resource persons delivered lectures and participants were teachers from affiliated colleges and M.Sc. students.
- (xvii) Organised a workshop about how to approach the SET question papers in Physics, during January 9 - 11, 2007. 16 outside participants and 35 students of our School participated in the workshop. The programme was sponsored by the office of the Maharashtra State Eligibility Test (SET), Pune.

- (xviii) Organised Raman Conference for Research Students on 10.3.2007 where students of various Schools presented their research work.

21. Experience of working as a resource person in scientific programmes

Worked as a resource person in a number of scientific programmes (cf. As a resource person in scientific programmes)

22. Experience of acting as judge in scientific programmes

- (i) acted as one of the judges for the **Applied Science and Fiction Stories** section of VISIO-TECH 2000 organized by the M.G.M. College of Engineering, Nanded during March 4-5, 2000. In the programme, students from various engineering colleges all over India presented their papers.
- (ii) acted as one of the judges for the **Physicon 2008** in the program ICON-2008 organized by the S.G.G.S. Institute of Engineering & Technology, Nanded during Feb 29 - March 2, 2008. In the programme, students from various engineering colleges all over India participated.

23. Experience of working in various bodies in the universities

- (i) Member of the Board of Studies of Physics in Gorakhpur University, Gorakhpur from 1985 to 1995.
- (ii) In-charge of computers in the School of Sciences in Indira Gandhi National Open University, New Delhi from 9.9.96 to 30.6.98.
- (iii) Ex-officio member of the Board of Studies of Physics of the S.R.T.M. University, Nanded from 1.7.98 onward.
- (iv) Chairman of the Ad-hoc Board of Studies of the School of Physical Sciences, S.R.T.M. University, Nanded, from 14.10.98 to 20.10.200 and from 17.8.2006 (Letter No. Exam/Sci/Pg/Ad-hoc/2006-07/3201 dated 17.8.2006).
- (v) Member of the Library Committee of the S.R.T.M. University, Nanded from 14.9.98 to 31 August 2001.
- (vi) Member of the board of studies in Physics of the university of Pune, Pune from the academic session 1998 - 99.
- (vii) Member of the Purchase Committee of the S.R.T.M. University, Nanded from 25.7.2000 to 6.11.2003 and from 19.12.2005 onward (Letter. No. Estate/ 2005-2006/405-7 dated 19.12.2005).
- (viii) Member of the Committee to implement the INFLIBNET programme at the S.R.T.M. University, Nanded from 16.4.2001 to 19.11.2006.
- (ix) Member of the Academic Council of the S.R.T.M. University, Nanded from 1 September 2001 to 31 August 2006.
- (x) Member of the Board of University Teaching & Research of Science of the S.R.T.M. University, Nanded from 1 September 2001 to 31 August 2006.
- (xi) Member of the board of studies in Astronomy of the Osmania university, Hyderabad from 11.11.2002 to 10.11.2004 (Notification No. 3626/B/992/BOS/Ast/Acad dated 11.11.2002 of Osmania university, Hyderabad).

(xii) Member of the Research & Recognition Committee (RRC) in Physics and of the Board of University Teaching & Research (BUTR) of S.R.T.M. University, Nanded from 12 March 2003 to 31 August 2005.

(xiii) Member of the Library Committee of S.R.T.M. University, Nanded from 8.8.2007 to 31 August 2011.

24. Paper setters for examinations of State Governments

(i) Member of the panel of paper setters for Physics-II and Physics-III in Physics for SET examination of the Govt. of Maharashtra. Performed the task for the exams of 2000 - 2006.

(ii) Setter of the question paper of Physics in 2000 for the examination of the Karnataka Public Service Commission, Bangalore.

25. Experience of working in Distance Education

I have been Reader in Physics in the School of Sciences in Indira Gandhi National Open University, New Delhi from 23.11.95 to 30.6.98. There I worked in Distance Education.

(i) writing of material in self-instructional mode

wrote unit Nos. 4, 5, 6 and 7 and two experiments for Laboratory Techniques (Physics) of the Certificate Programme for Laboratory Technicians.

(ii) transformation of material into self-instructional mode

transformed unit Nos. 1 (jointly), 2, 6 and 10 of Application Oriented Course entitled 'Computer Programming & Applications'.

(iii) preparation of Concept Papers for the new courses/programmes

prepared concept papers for the following courses/programmes:

- Astronomy (4 Credit course for B.Sc. students)
- Certificate in Astronomy (Certificate programme of 16 Credits for those who want to choose Astronomy as their career)
- Astronomy for Amateurs (8 Credit programme for those who have interest in Astronomy)

(iv) preparation of assignments

During my stay in IGNOU, New Delhi, I was coordinating the elective course entitled 'Thermodynamics & Statistical Mechanics' (PHE-6). I prepared assignments for the elective course for the years 1997, 1998 and 1999 in English as well as in Hindi.

(v) was paper setter and member of moderation board for a number of question papers for the elective courses in Physics.

(vi) translated a number of question papers for the elective courses in Physics from English to Hindi.

(vii) was coordinator of the programme entitled 'Laboratory Techniques (Physics) of the Certificate Programme for Laboratory Technicians'. For that I was organizing various meetings and was coordinating various activities related to the programme.

(viii) was coordinator of Physics Discipline Group in the School of Sciences from 1.11.97 to 30.6.98. For that I was organizing various meetings and was coordinating various activities related to the Physics Discipline Group.

(ix) **participated in various trainings & workshops related to Distance Education**

- Participated in the Training-cum-Development Workshop on Self Instructional Materials organized by Staff Training and Research Institute of Distance Education (STRIDE), Indira Gandhi National Open University (IGNOU), New Delhi during March 18-29, 1996.
- Participated in the pre-workshop seminar on Laboratory Technicians Programme, organised by IGNOU, New Delhi on May 7, 1996.
- Participated in the Commonwealth Secretariat, Commonwealth of Learning and IGNOU sponsored South Asian Workshop on developing a curriculum for Laboratory Technicians held during May 13-18, 1996. I was member of the coordination committee for the workshop.
- Participated in a workshop organised by IGNOU, New Delhi on ‘Vision-20-21: Alternative Paradigms for Management Education’, during November 6-7, 1996 at Jamia Hamdard, New Delhi.
- Participated in the program ‘Training on Multimedia’ organised by CMC during July 7-11, 1997 (2.30-5.00 p.m.).
- Participated in the program ‘Orientation of IGNOU Faculty in Audio-Video Media’ organised by Electronic Media Production Centre (EMPC) during July 8-9, 1997 (10.30 a.m-1.30 p.m).
- Participated in A Two-Week Intensive Course on Script Training for Educational Programmes Organised by EMPC during July 21-31, 1997 (10.00 a.m. to 5.00 p.m.)
- Participated in the workshop on **Art of Video Presentation** organised by the Electronic Media Production Centre, IGNOU during November 1 - 2, 1997.
- Attended ‘Information Technology - TRaining and APplication (IT-TRAP)’ programme conducted by Computer Division, IGNOU, New Delhi from 4.12.97 to 2.1.98

26. Memberships

- (i) Life member of the International Astronomical Union (Record No. 710; Commission 10; year 1988)
- (ii) Life member of the Astronomical Society of India (L 496)
- (iii) Life member of the Indian Association of Physics Teachers (LM/0248)
- (iv) Life member of the Indian Physics Association (LM/9447)
- (v) Life member of the Plasma Sciences Society of India (LM-75)
- (vi) Life member of the Indian Science Congress Association, Calcutta
- (vii) Life member of Indian Astronomical Society, Calcutta (C 21)
- (viii) Life member of National Academy of Sciences, Allahabad
- (ix) Life member of the Alumni Association of the University of Tübingen, Tübingen (Germany)
- (x) Fellow of the Royal Astronomical Society (London)
- (xi) Fellow of the Maharashtra Academy of Sciences
- (xii) Life member of Indian Society of Atomic & Molecular Physics (ISAMP) (1342)

(xiii) Life member of the Laser & Spectroscopy Society of India (LASSI) (382-2009)

27. Publications

Research papers (cf. List of research publications);

Scientific articles (cf. Scientific articles published);

General articles (cf. General articles published);

Text books (cf. Text books published);

Chapters in written in books (cf. Chapters in written in books).

28. Participation in conferences, workshops and seminars etc.

Participated in a number of National and International conferences, workshops and seminars etc. (cf. Conferences, workshops and seminars etc. attended).

29. Citation Index

Results of a number of our research papers are being regularly used by various research groups all over the world (cf. Citation index of research papers).

List of research publications

1974

1. Excitation cross sections of $1^1S \rightarrow m^1p$ transition in helium by electron impact
Udit Narain and Suresh Chandra: *Physica (Netherlands)* **77**, 623.
2. Coulomb effect and Vriens approach
Udit Narain and Suresh Chandra: *Phys. Lett. (Netherlands)* **50A**, 355.

1975

3. Electron impact ionization cross-section of some members of the helium isoelectronic series
Suresh Chandra and Udit Narain: *Ind. J. Phys. B (U.K.)* **8**, 770.
4. On coronal ionization cross-sections
Suresh Chandra and Udit Narain: *Ind. J. Pure and Appl. Phys.* **13**, 276.
5. A comparative study of some empirical and semi-empirical approaches
Suresh Chandra, N.K. Jain and Udit Narain: *Acta Ciencia Indica* **1**, 259.
6. Electron impact ionization cross-section of N_2 and O_2
Suresh Chandra and Udit Narain: *Can. J. Phys. (Canada)* **53**, 1044.
7. On solar coronal temperature
Udit Narain and Suresh Chandra: *Astrophys. J. (U.S.A.)* **200**, 234.
8. Electron detachment cross-section of negative ions
Suresh Chandra and Udit Narain: *Ind. J. Phys.* **49**, 900.

1976

9. Radiative attachment of electron with some alkali atoms
Suresh Chandra and Udit Narain: *Prog. Theor. Phys. (Japan)* **55**, 337.
10. On green-to-red line intensity ratio in solar corona
Suresh Chandra and Udit Narain: *Solar Phys. (Netherlands)* **46**, 183.
11. Ionization cross-sections and rate coefficients for atoms, ions and molecules
Suresh Chandra, H.P. Mital and Udit Narain: *Physica (Netherlands)* **83C**, 384.
12. Improved solar coronal temperature for equal green and red line intensities
Udit Narain and Suresh Chandra: *Solar Phys. (Netherlands)* **47**, 607.
13. Radiative recombination in the helium sequence
Suresh Chandra and Udit Narain: *J. Quant. Spectrosc. Radiat. Transfer (G.B.)* **16**, 789.
14. On ionization equilibrium of helium
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29. Intensity of lines from low lying levels in CII, NIII, OIV, NeVI, MgVIII, SiII and SiIII
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Suresh Chandra: Astrophys. Space Sci. (Netherlands) **96**, 455.
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41. Collision strength dependence of solar emission lines of SiII and SiIII
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119. Comment on propagation and dissipation of Alfvén waves in coronal holes
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Conferences, Workshops and Seminars etc. attended

1. NATO (North Atlantic Treaty Organization) Advance Research workshop on Molecular Astrophysics - State of the Art and Future directions held in Bad Windsheim, (F.R.G.) during July 8 - 14, 1984.
2. X Annual Meeting of the Astronomical Society of India held in Bombay during Nov. 26 - 29, 1984.
3. National workshop on Solar Physics held in Kodaikanal during Sept. 4 - 6, 1985.
4. XIX International Astronomical Union (IAU) General Assembly held in New Delhi during Nov. 19 - 28, 1985.
5. Summer School of Physics in Astronomy sponsored by the U.G.C., New Delhi, held at Osmania University, Hyderabad during June 11 - 28, 1986.
6. Second National Workshop on Solar Physics held at Kodaikanal during Sept. 24 - 29, 1986.
7. XII Annual Meeting of the Astronomical Society of India held in Raipur (M.P.) during Dec. 2 - 5, 1987.
8. III Orientation course held at Academic Staff College, Univ. of Gorakhpur, Gorakhpur during March 25 - April 21, 1989.
9. XII Annual Meeting of the Astronomical Society of India held at Srinagar (J&K) during June 21 - 24, 1989.
10. International Workshop on Binary Stars and Stellar Atmospheres held at Hyderabad during August 7 - 11, 1989.
11. Colloquium organized by the Alexander von Humboldt Foundation (F.R.G.) in New Delhi during Nov. 10 - 13, 1989.
12. 77th Annual Meeting of the Indian Science Congress Association (ISCA) held at Cochin during Feb. 4 - 9, 1990.
13. VI National Space Science Symposium held at Nagpur University, Nagpur during March 5 - 9, 1990.
14. Refresher course on Micro Computer Interfacing Techniques held at the Univ. of Rajasthan, Jaipur during March 27 - April 14, 1990.
15. International Astronomical Union Colloquium No. 132 held at Z.H. College, Univ. of Delhi, Delhi during October 10 - 13, 1990.
16. Refresher course on Operating System and Networks held at the Rani Durgavati Vishwavidyalaya, Jabalpur (M.P) during October 24 - Nov. 13, 1990.
17. 78th Annual Meeting of the Indian Science Congress Association (ISCA) held in Indore during Jan. 3 - 8, 1991.
18. National Seminar on The Sun and Our Environment held in Calcutta during February 7 - 8, 1991.
19. Conference on Laser and Spectroscopy in Atomic and Molecular Physics held in Bodh-Gaya (Bihar) during March 29 - 31, 1991.
20. Mini Workshop on Photoelectric Photometry sponsored by Inter-University, Centre for Astronomy and Astrophysics (IUCAA), Pune, held in Gauhati during Dec. 2 - 6, 1991.

21. 79th Annual Meeting of the Indian Science Congress Association (ISCA) held in Vadodara during Jan. 3 - 8, 1992.
22. GMRT Winter School on Solar Radio Astronomy and Interplanetary Medium held in Calcutta during Jan. 10 - 18, 1992
23. VII National Space Science Symposium (NSSS)-1992 held at Physical Research Laboratory, Ahmedabad during March 11 - 14, 1992.
24. National Seminar on Differential Geometry, Relativity and Astrophysics held in Calcutta during Nov. 12 - 14, 1992.
25. Dedication Seminar held at Inter-University Centre for Astronomy and Astrophysics (IUCAA), Pune during December 29 - 30, 1992.
26. Instructional Workshop on Helioseismology sponsored by Indo-US Collaborative Program on Global Oscillations Network Group (GONG) and Physical Research Laboratory, Ahmedabad, held at Ahmedabad during Jan. 4 - 8, 1993.
27. XV Annual Meeting of the Astronomical Society of India held at Bhabha Atomic Research Centre (BARC), Bombay during March 2 - 5, 1993.
28. VI Asian Pacific Regional International Meeting held IUCAA Pune during August 16 - 20, 1993
29. National Conference on Current Trends in Atomic and Molecular Physics held at Bhabha Atomic Research Centre, Bombay during December 21 - 23, 1993.
30. XVI Annual Meeting of the Astronomical Society of India held at IUCAA, Pune during October 25 - 28, 1994.
31. VIII National Space Science Symposium (NSSS) - 1994 held at Trivendrum during December 20 - 24, 1994.
32. IAU Colloquium No. 154 on Solar and Interplanetary Transients held at National Centre for Radio Astronomy (NCRA), Pune during Jan 23 - 27, 1995.
33. Delivered an invited talk on 'Astronomical Masers' in the XVII Annual Meeting of the Astronomical Society of India, held at Gauhati University, Guwahati during January 17 - 20, 1996.
34. IX National Space Science Symposium (NSSS) 1996 held at Osmania University, Hyderabad during February 6 - 10, 1996.
35. 84th Annual Meeting of the Indian Science Congress Association (ISCA) held at the university of Delhi, Delhi during Jan 3-8, 1997.
36. 85th Annual Meeting of the Indian Science Congress Association (ISCA) held at the Osmania university Hyderabad during Jan 3-8, 1998.
37. Seminar of the Associates of IUCAA held at Inter-University Centre for Astronomy & Astrophysics (IUCAA), Pune during Jan 7 - 11, 1999.
38. IAU Symposium 199 on The Universe at Low Radio Frequencies held at National Centre for Radio Astronomy (NCRA), Pune during Nov 30 - Dec 4, 1999.
39. 87th Annual Meeting of the Indian Science Congress Association (ISCA) held at the university of Pune, Pune during Jan 3-7, 2000.

40. Workshop on Neutron Stars: Isolated and Binary systems held at the IUCAA, Pune during July 15-16, 2000.
41. General Assembly of the International Astronomical Union (IAU) held at Manchester (U.K.) during August 7-18, 2000.
42. Conference on First Steps in the Origin of Life in the Universe held at the Abdus Salam International Centre for Theoretical Physics, Trieste, Italy during September 18 - 22, 2000.
43. Workshop on Observing with IUCAA Telescope held at IUCAA, Pune during December 21 - 23, 2000.
44. 88th Annual Meeting of the Indian Science Congress Association (ISCA) held at the Indian Agriculture Research Institute, Delhi during January 3-7, 2001.
45. XXI Annual Meeting of the Astronomical Society of India held at IUCAA, Pune during February 5 - 8, 2002.
46. State level seminar on 'INFORMATION TECHNOLOGY IN EVERYDAY LIFE' organised by the N.S.B. College, Nanded on 22 September 2002.
47. Workshop on Early Universe, Large scale structures and the Cosmic microwave background radiation held at the University of Delhi, Delhi during November 16 - 20, 2002.
48. Workshop on The Provocative Universe held at the Inter-University Centre for Astronomy & Astrophysics, Pune during June 30 - July 2, 2003.
49. Workshop on New Trends in UGC curriculum for UG courses in Physics, Electronics and Microbiology held at Dayanand Science College, Latur on 10 August 2003.
50. National Conference on Radio Science in India (INCURSI-2003) held at National Physical Laboratory, New Delhi during November 27-29, 2003.
51. Workshop on Awareness of Patents held at S.R.T.M. University, Nanded on 25 February 2004.
52. Workshop on Protein Modeling and Drug Designing held in the School of Life Sciences, S.R.T.M. University, Nanded 431 606 on 9 October 2004.
53. International Conference on Submillimetre Wave Science & Technology (ICSST 04) held at the Physical Research Laboratory, Ahmedabad during October 13-15, 2004.
54. International Meeting on Star Clusters held at the Aryabhata Research Institute of Observational Sciences (ARIES), Nainital on 21 February 2005.
55. XXIII Meeting of the Astronomical Society of India held at the Aryabhata Research Institute of Observational Sciences (ARIES), Nainital during 22-24 February 2005.
56. International Solar Workshop on 'Transient Phenomena on the Sun and Interplanetary Medium' held at the Aryabhata Research Institute of Observational Sciences (ARIES), Nainital during April 5 - 7, 2005.
57. Workshop on UGC Internet use (E-Journal) organised by the S.R.T.M. University, Nanded on dated 18 October 2005.
58. XXVIIIth General Assembly of the International Union of Radio Science (URSI) held at New Delhi during October 23-29, 2005.
59. XIV National Space Science Symposium (NSSS)-2006 held at Andhra University, Visakhapatnam during February 9 - 12, 2006.

60. Discussion meeting on 'A Solar Coronagraph in ADITYA - 1' held at the Indian Institute of Astrophysics, Bangalore on September 5, 2006.
61. Discussion meeting on 'South Africa Large Telescope (SALT)' held at the Inter-University Centre for Astronomy & Astrophysics (IUCAA), Pune on December 10, 2006.
62. XXV Annual Meeting of the Astronomical Society of India held in Osmania University, Hyderabad during February 7 - 9, 2007.
63. National Conference on Radio Science in India (INCURSI-2007) held at National Physical Laboratory, New Delhi during February 21-24, 2007.
64. International Heliophysical Year (IHY) Workshop held at the Aryabhata Research Institute of Observational Sciences (ARIES), Nainital during May 7 - 10, 2007.
65. National Symposium on Gamma Ray Astronomy held at the Indian Institute of Astrophysics, Bangalore during November 23 - 24, 2007.
66. International Conference on Microwaves and Optoelectronics (ICMO) 2007 held at Dr. B.A.M. University, Aurangabad during December 17 - 20, 2007
67. Topical Conference on Atomic & Molecular Physics (TC2008) held at S.P. University, Vallabh Vidyanagar (Gujrat) during January 3-5, 2008
68. IAEA International Workshop on Challenges in Plasma Spectroscopy for Future Fusion Research Machines held at B.M. Birla Auditorium, Jaipur during February 20-22, 2008.
69. Conclave of Science Faculty - 2008 organised by the School of Earth Sciences, S.R.T.M. University, Nanded on 18 April 2008.
70. Prof. Yashpal UGC/AICTE Review Committee organised by the UGC, Western Region, Pune at the IUCAA, Pune on 23 May 2008.
71. Workshop on 'Difficulties in running university & colleges and their remedies' organised jointly by the SRTM Univ, Nanded and Yashwant Mahavidya, Nanded on 8 June 2008
72. XXVII Meeting of the Astronomical Society of India held Indian Institute of Astrophysics, Bangalore during 18-20 February 2009.
73. Delivered an invited talk on 'Collision rates for asymmetric top molecules and their application in astronomy & astrophysics' in the Meghnad Saha Memorial Symposium held at Allahabad University, Allahabad during March 23-25, 2009.

Scientific articles published

1. Planetary rings
Suresh Chandra: Bull. Indian Association of Physics Teachers **3**, 379 (1986).
2. A calendar for many centuries in one relation
Suresh Chandra and Rahul: Mathematical Education **3**, 44 (1986).
3. The odd ball
Suresh Chandra: Science Reporter **24**, 45 (1987).
4. Natural water masers
Suresh Chandra: Physics Education **4**, 5 (1987).
5. A simple representation of the Gregorian calendar
Suresh Chandra and Rahul: Bull. Indian Association of Physics Teachers **5**, 83 (1988).
6. Solar neutrinos
Suresh Chandra: Physics Education **5**, 35 (1988).
7. Planetary ring in the solar system
Suresh Chandra: Physics Education **5**, 97 (1988).
8. Generating perfect numbers
Suresh Chandra, O.P. Srivastava and Rahul: Science Reporter **25**, 349 (1988).
9. Strongest natural masers
Suresh Chandra: Mahavisva **5**, 6 (1992).
10. Coordinate systems in Astronomy
Suresh Chandra: Physics Education **9**, 362 (1993).
11. Heating mechanism for solar chromosphere and corona
Pankaj Agarwal, Udit Narain and Suresh Chandra: Physics Education **11**, 66 (1994)
12. Wavefunctions for Hydrogen atom
Suresh Chandra: Physics Education **12**, 94 (1995).
13. Binary star systems
Suresh Chandra, Lalan Prasad and Arvind Kumar Sharma: Physics Education **12**, 137 (1995).
14. Cosmic vis-a-vis Terrestrial Laboratories
Suresh Chandra: ASSA Newsletter **3**, 1 (1995)
15. Cyclic molecules in cosmic objects
Suresh Chandra: Teaching of Astronomy in Asian-Pacific Region, Bulletin No. 11, 17 (1996)
16. Cosmic molecules
Suresh Chandra: Physics Education **13**, 256 (1996).
17. How to calculate potential energy-curve for a diatomic molecule
Suresh Chandra: Physics Education **14**, 41 (1997).

18. Cosmic laboratories vis-a-vis terrestrial laboratories
Suresh Chandra: Bull. Indian Association of Physics Teachers **15**, 261 (1998).
19. Inverse Compton scattering
Suresh Chandra: Physics Education **16**, 63 (1999).
20. Fundamental forces
Suresh Chandra, S.P. Jagtap and A.K. Sharma: Physics Education **17**, 37 (2000).
21. Tides
Suresh Chandra: Physics Education **17**, 227 (2000).
22. Cosmic microwave background - a powerful tool of cosmology
Suresh Chandra: Physics Education **17**, 319 (2001).
23. Absorption against the cosmic 2.7 K background
A.K. Sharma and Suresh Chandra: Universe & Beyond **4 & 5** (combined issue), 24 (2000 - 2001).
24. Confidence of Raman
Suresh Chandra: Bull. Indian Association of Physics Teachers **18**, 325 (2001).
25. 21-cm line - a messenger from distant space
Suresh Chandra: Bull. Indian Association of Physics Teachers **20**, 5 (2003).
26. Pluto is a planet?
Suresh Chandra: Bull. Indian Association of Physics Teachers **23**, 191 (2006).
27. Pluto is no more a planet
Suresh Chandra: Bull. Indian Association of Physics Teachers **23**, 328 (2006).
28. Successive rotations about various axes
Suresh Chandra: Bull. Indian Association of Physics Teachers **23**, 374 (2006).
29. Relation between coordinates in two reference frames after rotation about various axes
Suresh Chandra: Bull. Indian Association of Physics Teachers **24**, 74 (2007).
30. Restructuring M.Sc. Physics Course?
Suresh Chandra: Bull. Indian Association of Physics Teachers **25**, 135 (2007); Also in the Regional Convention of Indian Association of Physics Teachers (IAPTRC - 8) held at Willington College, Sangli (Maharashtra) during 29-30 September 2007.
31. New plant in our solar system?
Suresh Chandra: Bull. Indian Association of Physics Teachers **26**, 321 (2008)

Letter to the Editor

1. H₂O-maser sources
Suresh Chandra: Physics Education **2**, 29 (1986)

2. On the article entitled 'Decimalization of the Time interval and Unit' written by D.R. Bagalkoti (Bull. I.A.P.T. **15**, 293, 1998)
Suresh Chandra: Bull. Indian Association Physics Teachers **16**, 2 (1999)
3. An accelerating universe?
Suresh Chandra: Physics Education **17**, 373 (2001).
4. On the article entitled 'Indian Science Coming of Age' written by N.K. Dadhich (Bull. I.A.P.T. **20**, 222-226, July 2003)
Suresh Chandra: Bull. Indian Association Physics Teachers **20**, 256 (2003)
5. Value of Ph.D. degrees
Suresh Chandra: Bull. Indian Association Physics Teachers **20**, 328 (2003)

General articles published

1. Higher Education in India: An analysis
S. Mohan Karuppaiyl and Suresh Chandra: University News, Vol. 39, No. 36, pp. 30 - 33, September 3-9, (2001), and Assessment and Accreditation in Higher Education, Edited by Dr. Rita Sharma, Association of Indian Universities (2004) pp. 3 - 9.
2. Proposal of Credit System for Higher Education
Suresh Chandra: University News, Vol. 41, No. 1, pp. 1 - 4, January 6 - 12, (2003).
3. Medium of instruction in Higher Education
Suresh Chandra: University News, Vol. 41, No. 25, p. 25, June 23-29, (2003).
4. Term appointments in Higher Education
Suresh Chandra: New Frontiers in Education, Vol. XXXIII, No. 2, pp. 128 - 130, April-June, 2003
5. Remark on "Incentive for Ph.D./M.Phil. : Unintended Consequences"
Suresh Chandra: University News, Vol. 41, No. 46, p. 26, November 17-23, (2003).
6. Associateship programme of Inter-University Centre for Astronomy & Astrophysics, Pune
Suresh Chandra: Teaching of Astronomy in Asian-Pacific Region, Bulletin No. 20, 9 (2003)
7. Selections in Higher Education
Suresh Chandra: University News, Vol. 42, No. 30, p. 24, July 26 - August 1, (2004).
8. Career advancement from Reader to Professor
Suresh Chandra: New Frontiers in Education, Vol. XXXIV, No. 4, pp. 316 - 317, October-December, 2004

News Items

1. First definitive images of brown dwarfs
Suresh Chandra: Physics Education **13**, 261 (1996).

Text books published

1. Mechanics and General Physics by H.B. Lal and Suresh Chandra,
United Book Depot, Allahabad (1990)
2. A text book of Mathematical Physics and Classical Mechanics by Suresh Chandra,
Chandra Prakashan, Gorakhpur (1992).
3. A text book of Modern Physics by Suresh Chandra,
Chandra Prakashan, Gorakhpur (1992).
4. FORTRAN Programming and Numerical Techniques by Suresh Chandra,
Sultan Chand & Sons, New Delhi (1995).
5. Computer Applications in Physics by Suresh Chandra,
Narosa Publishing House Pvt. Ltd., New Delhi (2003) & Alpha Science International Ltd.,
Pangbourne, England (2003); Second edition is published in 2006
6. A Text Book of Mathematical Physics by Suresh Chandra,
Narosa Publishing House Pvt. Ltd., New Delhi (2003) & Alpha Science International Ltd.,
Pangbourne, England (2003); Second edition is published in 2006
7. Applications of numerical techniques with C by Suresh Chandra,
Narosa Publishing House Pvt. Ltd., New Delhi (2006) & Alpha Science International Ltd.,
Pangbourne, England (2006)
8. Quantum Mechanics by Suresh Chandra,
CBS Publishers & Distributors, New Delhi (2008)
9. Statistical Mechanics by Suresh Chandra,
CBS Publishers & Distributors, New Delhi (2008); Subsidised by the Government of India
through the National Book Trust, India for the benefit of students.
10. Classical Mechanics by Suresh Chandra,
Narosa Publishing House Pvt. Ltd., New Delhi (2009) & Alpha Science International Ltd.,
Pangbourne, England (2009)
11. Plasma Physics by Suresh Chandra,
CBS Publishers & Distributors, New Delhi (in press)
12. The Solar System for Everyone by A.W. Joshi and Suresh Chandra
National Council for Educational Research & Training (NCERT), New Delhi (in press)

Chapters written in books

1. Sun and its family
Suresh Chandra and U.S. Pandey: Horizons of Physics, Vol. 1, Willey Eastern Ltd., New
Delhi, (1989) pp. 284 - 312.
2. Molecules in Cosmic Objects
Suresh Chandra: Physics of Particles, Nuclei and Materials - Recent Trends (New Horizons
of Physics Series), ed. by Raj K. Gupta, Narosa Publishing House, New Delhi (2002) pp.
269 - 290.

As a resource person in scientific programmes

1. delivered six lectures as a resource person on **FORTRAN programming** in M.L.K. Postgraduate college, Balrampur (Gonda) (U.P.) in module I (Computer Programming & Methodology) sponsored by the Dept. of Electronics, Govt. of India, New Delhi during 1.5.88 to 11.6.88.
2. delivered three lectures as a resource person on **FORTRAN programming** in a refresher course on Micro-Computer Interfacing Techniques organised by the University Science Instrumentation Centre, Univ. of Rajasthan, Jaipur during March 27 - April 14, 1990.
3. delivered four lectures and supervised the lab-work as a resource person on **FORTRAN programming** in the workshop on **Awareness of FORTRAN language** jointly organised by the School of Physical Sciences and the School of Earth Sciences of S.R.T.M. University, Nanded during October 28-31, 1998.
4. delivered three lectures on 22 & 23 February 1999 in the refresher course organised by the Dept. of Physics, Amravati Univ., Amravati 444602.
5. delivered a lecture on **FORTRAN programming** on dated 28.1.2000 in the Workshop on Bioinformatics organised by the School of Life Sciences, S.R.T.M. University, Nanded 431606 during Jan. 28 - 30, 2000.
6. delivered a series of six guest-lectures on **FORTRAN programming** on dated 31.1.2000 and 1.2.2000 to the M.Sc. (Physics) students in the Shri Shivaji College, Parbhani 431401.
7. delivered a series of five lectures on **Fundamentals of Astronomy** to the students of B.Sc. Final year of various colleges affiliated to S.R.T.M. University, Nanded during Feb. 2 - 5, 2000 in the program organised in the campus of the S.R.T.M. University, Nanded 431606
8. delivered a lecture on **Wonders in Space** on 28.2.2000 in the National Science Day celebration programme organised by the School of Life Sciences, S.R.T.M. Univ., Nanded 431606 during Feb. 25 - 28, 2000.
9. supervised the team for the **Star-Watch** programme on 25 & 26 Feb. 2000, each day from 7.30 p.m. to 9.30 p.m., for the National Science Day celebration programme organised by the School of Life Sciences, S.R.T.M. Univ., Nanded 431606 during Feb. 25 - 28, 2000.
10. delivered a lecture on 13.6.2000 in the refresher course organised by the School of Library & Information Science, S.R.T.M. Univ. Nanded 431606.
11. delivered a lecture on 16.11.2000 & participated in the team for night observations during November 16-19, 2000 in the 'Introductory School on Astronomy & Astrophysics' sponsored by the Inter-University Centre for Astronomy & Astrophysics (IUCAA), Pune during November 16-20, 2000.
12. delivered an invited talk on 'Theoretical study of molecules observed in cosmic objects' on 22.11.2000 at Raman Research Institute, Bangalore.
13. delivered a lecture on **FORTRAN programming** on dated 28.2.2001 in the Second Workshop on Bioinformatics organised by the School of Life Sciences, S.R.T.M. University, Nanded 431606 during Feb. 26 - 28, 2001.
14. supervised the team for the **Star-Watch** programme on 28 Feb. 2001, from 7 p.m. to 10 p.m., for the National Science Day celebration programme organised by the School of Life Sciences, S.R.T.M. Univ., Nanded 431 606 during Feb. 28 - March 1, 2001.

15. delivered a lecture on **Raman Effect** on dated 1.3.2001 in the the National Science Day celebration programme organised by the School of Life Sciences, S.R.T.M. Univ., Nanded 431606 during Feb. 28 - March 1, 2001.
16. delivered four lectures on dated 16 & 17 June 2001 in the Refresher Course organised by the Dept. of Physics, Amravati University, Amravati 444602.
17. delivered two lectures on dated 11 August 2001 in the Refresher Course organised by the Dept. of Physics, Dr. B.A.M. University, Aurangabad 431004.
18. inaugurated Physics Club at Shri Shivaji College, Parbhani 431401 on dated 16.9.2001 and delivered a lecture there.
19. delivered three lectures in the UGC sponsored refresher course organised by the School of Physical Sciences, S.R.T.M. Univ., Nanded, during October 1 - 28, 2001.
20. delivered one lecture on dated 14.12.2001 in the UGC sponsored refresher course organised by the School of Chemical Sciences, S.R.T.M. Univ., Nanded.
21. delivered three lectures on 26 and 28 December 2001 in the UGC sponsored refresher course organised by the School of Life Sciences, S.R.T.M. University, Nanded.
22. delivered one lecture on 18.1.2002 in the IUCAA, Pune sponsored workshop on Photometric Data Reduction & Analysis organised by the J.E.S. College, Jalna.
23. delivered one lecture on 23.1.2002 on Fundamentals of Astronomy to the students and teachers in the Nagarjuna Public School, Nanded
24. delivered three lectures on August 8 and 10, 2002 in the workshop about how to approach the SET question papers in Physics organised during August 8 - 10, 2002 and sponsored by the office of the Maharashtra State Eligibility Test (SET), Pune.
25. delivered one lecture on Cosmic Molecules at Saurashtra University, Rajkot on dated 21.4.2003
26. delivered three lectures on August 1, 2 and 3, 2004 in the workshop about how to approach the SET question papers in Physics organised during August 1-3, 2004 and sponsored by the office of the Maharashtra State Eligibility Test (SET), Pune.
27. delivered Invited Talk on 'Anomalous Absorption in Cosmic Molecules' in the International Conference on Submillimetre Science & Technology (ICSST 04) held at Physical Research Laboratory, Ahmedabad during October 13-15, 2004
28. delivered two talks on 18 January 2005 on 'Sun' and 'Planets and Asteroids' in the Workshop on 'Astronomy & Astrophysics' (for College Physics Teachers in A.P.; Sponsored by the UGC, New Delhi) held at Astronomy Department, Osmania University, Hyderabad during 18-20 January 2005.
29. delivered Invited Talk on 'Solar Coronal Heating Mechanisms' in the International Solar Workshop on 'Transient Phenomena on the Sun and Interplanetary Medium' held at the Aryabhata Research Institute of Observational Sciences (ARIES), Nainital during April 5 - 7, 2005.
30. delivered Invited Talk on 'Sun' in the Seminar on 'Current Trends in Physics Education: A Tribute to Albert Einstein' held at Science College, Nanded on 30 December 2005.
31. delivered four lectures in the workshop about how to approach the SET question papers in Physics organised during January 10 - 12, 2006 and sponsored by the office of the Maharashtra State Eligibility Test (SET), Pune.

32. delivered four lectures on **Numerical Techniques** on dated 20 and 21 January 2006 in the UGC, New Delhi sponsored Refresher Course in Physics, organised by the Academic Staff College, University of Goa, Goa.
33. delivered two lectures on **Sun and Planetary System** on dated 1 February 2006 in the UGC, New Delhi sponsored Workshop on Astronomy & Astrophysics (for College Physics Teachers in A.P.), organised by the Department of Astronomy, Osmania University, Hyderabad.
34. delivered a colloquium on **Anomalous absorption in cosmic objects** on dated 18 May 2006 at Zentrum für Astronomie und Astrophysik, Technische Universität Berlin, Hardenbergstrasse 36, D-10623 Berlin, Germany
35. delivered two lectures on **Quantum Mechanics** on dated 20 & 21 December 2006 in the Workshop on Fundamentals of Quantum Mechanics and Astrophysics organised by the School of Physical Sciences, S.R.T.M. Univ., Nanded
36. delivered four lectures on Atomic & Molecular Physics, Quantum Mechanics and Classical Mechanics in the workshop about how to approach the SET question papers in Physics organised during January 9 - 11, 2007 and sponsored by the office of the Maharashtra State Eligibility Test (SET), Pune.
37. delivered one lecture on January 12, 2007 in the NES Science College, Nanded on Basics of Quantum Mechanics in the lecture series in the Memory of Late Dr. K. Ram Mohanrao.
38. delivered one lecture on February 6, 2007 in the Nutan Mahavidyalaya, Selu on 'Are we alone in the universe?' in the State Level Seminar.
39. delivered an invited talk on 'Anomalous Absorption in Molecules in Cool Cosmic Objects' in the XXV Annual Meeting of the Astronomical Society of India, held at Osmania University, Hyderabad during February 7 - 9, 2007.
40. delivered an invited talk on 'Alfvén waves in a viscous, resistive medium around the sun' in the IHY Workshop held at the ARIES, Nainital during May 7 - 10, 2007.
41. inaugurated the Amateur Astronomers Association, Parbhani 431401 on dated 12.8.2007 and delivered a lecture there.
42. delivered an invited talk on 'Collision rates and Identification of Molecules in cool cosmic objects' in the Topical conference on Atomic & Molecular Physics (TC2008) held at S.P. University, Vallabh Vidyanagar (Gujrat) on 3 January 2008.
43. delivered an invited talk on 'Molecules in cool cosmic objects' in the Inter-University Accelerator Centre, JNU Campus, New Delhi on 11 February 2008.
44. delivered an invited talk on 'Molecules in cool cosmic objects' in the AMITY University Uttar Pradesh, Noida on 25 February 2008.
45. delivered an invited talk on 'Our Earth' in the Workshop on 'Understanding the Planet Earth' held at the School of Earth Sciences, S.R.T.M. University, Nanded during March 30-31, 2008.
46. delivered an invited talk on 'Cosmic molecules' in the Institute of Physics, Bhubaneswar on 11 April 2008.
47. delivered a series of 12 lectures on 'Matrices and their applications in Physics' from April 28 - May 3, 2008 in the Summer School organised by Dnyansadhana College, Thane (Maharashtra).

48. delivered an invited talk on 'Molecules in cool cosmic objects' at the Centre for Theoretical Physics, JMI, New Delhi 24 June 2008.
49. delivered an invited talk on 'Collision rates for asymmetric top molecules and their application in astronomy & astrophysics' in the Meghnad Saha Memorial Symposium held at Allahabad University, Allahabad during March 23-25, 2009.
50. delivered a series of 9 lectures on 'Matrices and their applications in Physics' from March 30 - April 1, 2009 in the Motivational Bridge Course in Physics, sponsored by the Indian Academy of Sciences, Bangalore and held at Gogate Jogalekar College, Ratnagiri (Maharashtra).

As guest in some programmes

1. President for the Inaugural Function of the Student Union of Pratibha Niketan College, Nanded organised on 31.12.2003.
2. Inaugurated 'Science Fair' on 26 December 2004 jointly organised Nagarjuna Public School, Nanded and Nalanda English Medium School, Nanded.
3. Inaugurated 'Podar Jumbo Kids Pre-School', Nanded on 18 March 2005.
4. Inaugurated Physics Club at Shri Shivaji College, Parbhani 431401 on dated 16.9.2001 and delivered a lecture there.

Citation index of research papers

Here, we are reporting those citations of the papers which have come to our knowledge.

1. On solar coronal temperature

Udit Narain and Suresh Chandra: *Astrophys. J. (U.S.A.)* **200**, 234 (1975).

(i) Electron impact ionization of alkali metal ions

A. Kumar and B.N. Roy: *J. Phys. B: Atomic & Molecular Physics (G.B.)* **12**, 3979 (1979).

(ii) Electron impact double ionization of Ar^{2+} , Ar^{3+} and Xe^+

S.N. Chatterjee and B.N. Roy: *J. Phys. B: Atomic, Molecular, & Optical Physics (G.B.)* **20**, 2291 (1987).

2. Intensity of lines from low lying levels in CII, NIII, OIV, NeVI, MgVIII, SiII and SiII

Suresh Chandra: *Solar Phys. (Netherlands)* **75**, 133 (1982).

(i) CLOUDY 90: Numerical simulation of plasmas and their spectra

G.J. Ferland, K.T. Korista, D.A. Verner, J.W. Ferguson, J.B. Kingdon and E.M. Verner: *Publ. Astron. Soc. Pac.* **110**, 761 (1998).

3. Quasi-resonance collisional pumping in H_2O masers

D.A. Varshalovich, W.H. Kegel and Suresh Chandra: *Sov. Astron. Lett. (U.S.A)* **9**, 209 (1983) (*Pisma v Astron. Zh. (USSR)* **9**, 395 (1983)).

(i) Astronomical masers

M. Elitzur: *Annu. Rev. Astron. Astrophys.* **30**, 75 (1992).

(ii) Astronomical masers

M. Elitzur: Kluwer Academic Publishers, London (1992).

(iii) Water masers in dusty environments

N. Babkovskaia and J. Poutanen: *Astron. Astrophys.* **418**, 117 (2004).

(iv) The $\Lambda_0 = 1.35$ cm H_2O masers line: The hyperline structure and profile asymmetry

D.A. Varshalovich, A.V. Ivanchik and N.S. Babkovskaya: *AstL (Astronomy letter)* **32** 29 (2006)

4. Einstein A-coefficients for rotational transitions in the H_2O - molecule

Suresh Chandra, D.A. Varshalovich and W.H. Kegel: *Astron. Astrophys. Suppl. (France)* **55**, 51 (1984).

(i) Astrophysical water masers in the presence of magnetic fields

S. Deguchi, and W.D. Watson: *Astrophys. J. (U.S.A.)* **302**, 750 (1986).

(ii) Collisional excitation of interstellar water

A. Palma, S. Green, D.J. Defrees, and A.D. McLean: *Astrophys. J. Suppl.* **68**, 287 (1988).

(iii) Physical conditions around Orion IRC2 as probed by various masers

Q. Zeng, and G.F. Lou: *Astron. Astrophys.* **206**, 117 (1988).

(iv) Astronomical masers

M. Elitzur: Kluwer Academic Publishers, London.

- (v) Relaxation of molecular velocities and spectral line profiles of astrophysical masers
N. Anderson, and W.D. Watson: *Astrophys. J.* **407**, 620 (1993).
- (vi) Water at $z = 2.286$
P.J. Encrenaz, F. Combes, F. Casoli, M. Gerin, L. Pagani, C. Horellou, and C. Gac: *Astron. Astrophys. (Letter)* **273**, L19 (1993).
- (vii) Vibratorially elastic cross sections for electron scattering from water molecules
Y. Okamoto, K.Onda and Y. Itikawa: *J. Phys. B: Atomic, Molecular, & Optical Physics (G.B.)* **26**, 7450 (1993).
- (viii) A preliminary study of ortho-water and para-water masers in IRC2
Q. Zeng: *Acta Astron. Sin.* **35/3**, 281 (1994).
- (ix) First observations of the water vapour line at 557 GHz from the interstellar medium
J. Tauber, G. Olofsson, G. Pilbratt, L. Nordh, and U. Frisk: *Astron. Astrophys.* **308**, 913 (1996).
- (x) Collisional excitation of H₂O by H₂ molecules
T.R. Phillips, S. Maluendes, and S. Green: *Astrophys. J. Suppl.* **107**, 467 (1996).
- (xi) Thermal H₂O emission from the Herbig-Haro flow HH54
R. Liseau, C. Ceccarelli, B. Larsson, B. Nisini, G.J. White, P. Ade, C. Armand, M. Burgdorf, E. Caux, R. Cerulli, S. Church, P.E. Clegg, A. Digorgio, I. Furniss, T. Giannini, W. Glencross, C. Gry, K. King, T. Lim, D. Lorenzetti, S. Molinari, D. Naylor, R. Orfei, P. Saraceno, S. Sidher, H. Smith, L. Spinoglio, B. Swinyard, D. Texier, E. Tommasi, N. Trams, and S. Ungar: *Astron. Astrophys. (Letter)* **315**, L181 (1996).
- (xii) Monte Carlo simulation at very high optical depth: non-LTE transfer in H₂O
D. Hartstein, and R. Liseau: *Astron. Astrophys.* **332**, 703 (1998).
- (xiii) The H₂O abundance and star formation history in ρ -Oph
R. Liseau and G. Olofsson: *Astron. Astrophys.* **343**, L83 (1999).
- (xiv) Strong H₂O and high-J CO emission towards the class O protostar L1448-mm
B. Nisini, M. Benedettini, T. Giannini, E. Caux, A.M. diGiorgio, R. Liseau, D. Lorenzetti, F. Palla, S. Pezzuto, P. Saraceno, H.A. Smith, G.J. White:
Astron. Astrophys. **350**, 529 (1999).
- (xv) Shock excited far-infrared molecular emission around T Tau
L. Spinoglio, T. Giannini, B. Nisini, M.E. van den Ancker, E. Caux, A.M. Giorgio, D. Lorenzetti, F. Palla, S. Pezzuto, P. Saraceno, H.A. Smith, and G.J. White: *Astron. Astrophys.* **353**, 1055 (2000).
- (xvi) Infrared, far-infrared, and maser emission from the nascent water formed in the OH-H₂ reaction
P. Andresen, T. Thissen, and K. Schroeder: *Astrophys. J.* **550**, 346 (2001).
- (xvii) The ISO-LWS map of the Serpens cloud core. II. The line spectra
B. Larsson, R. Liseau and A.B. Men'shchikov: *Astron. Astrophys.* **386**, 1055 (2002).
- (xviii) Dynamics and cycle of intensity H₂O and OH masers
L. Han-Ping, S. Jin, F. Wei-Hai and T. Thissen: *Chin. Phys. Lett.* **19**, 1092 (2002).
- (xix) Electron-impact rotational excitation of water
A. Faure, J.D. Gorfinkiel, Jimena D. and J. Tennyson: *M.N.R.A.S. (G.B.)* **347**, 323 (2004)
- (xx) Watere masers in dusty environments
N. Babkovskaia and J. Poutanen: *Astron. Astrophys.* **418**, 117 (2004).

- (xxi) The pure rotational line emission of ortho-water vapour in comets. I. Radiative transfer model
F. Bensch and E.A. Bergin: *Astrophys. J.* **615**, 531 (2004).
- (xxii) Mega-masers and galaxies
K.Y. Lo: *Ann. Rev. Astron. Astrophys.* **43**, 625 (2005).
- (xxiii) A 1 AU expanding water circular ring in the W75 N(B)-VLA 2 Shell
L. Uscanga, J. Canto, S. Curiel, G. Anglada, J.M. Torrelles, N.A. Patel, N. Nimesh, J.F. Gomez and A.C. Raga: *Astrophys. J.* **634**, 468 (2005).
- (xxiv) A self-consistent model of a 22 GHz water maser in a dusty environment near late-type stars
N. Babkovskaia and J. Poutanen: *Astron. Astrophys.* **447**, 949 (2006).
- (xxv) The $\lambda = 1.35$ cm H₂O maser line: The hyperfine structure and profile asymmetry
D.A. Varshalovich, A.V. Ivanchik and N.S. Babkovskaya: *Astron. Lett.* **32**, 29 (2006).

5. Radiative transfer effects in H₂O masers

Suresh Chandra, W.H. Kegel, D.A. Varshalovich and M.A. Albrecht: *Astron. Astrophys. (F.R.G.)* **140**, 295 (1984).

- (i) A model for the excitation of water in comets
D. Bockelee-Morvan: *Astron. Astrophys.* **181**, 169 (1987).
- (ii) Radial velocities of stars with microwave maser emission. III-Semiregular variables
G. Wallerstein, and J.F. Dominy: *Astrophys. J.* **326**, 292 (1988).
- (iii) Excitation of millimetre and submillimetre water masers
D.A. Neufeld, and G.J. Melnick: *Astrophys. J.* **368**, 215 (1991).
- (iv) A preliminary study of ortho-water and para-water masers in IRC2
Q. Zeng: *Acta Astron. Sin.* **35/3**, 281 (1994).
- (v) Water masers in dusty environment
N. Babkovskaia and J. Poutanen: *Astron. Astrophys.* **418**, 117 (2004).
- (vi) A self-consistent model of a 22 GHz water maser in a dusty environment near late-type stars
N. Babkovskaia and J. Poutanen: *Astron. Astrophys.* **447**, 949 (2006).

6. Einstein A-Values for pure rotational transitions in the HDO-molecule

Suresh Chandra, W.H. Kegel and D.A. Varshalovich: *Astron. Astrophys. Suppl. (France)* **58**, 687 (1984).

- (i) Electron-impact rotational excitation of water
A. Faure, J.D. Gorfinkiel, Jimena D. and J. Tennyson: *M.N.R.A.S. (G.B.)* **347**, 323 (2004)
- (ii) A far-infrared molecular and atomic line survey of the Orion KL region
M.R. Lerate, M.J. Barlow, B.M. Swinyard, J.R. Goicoechea, J. Cernicharo, T.W. Grundy, T.L. Lim, E.T. Polehampton, J.P. Baluteau, S. Viti and J. Yates: *M.N.R.A.S. (G.B.)* **370**, 597 (2006)

7. Einstein A-coefficients for rotational transitions in CH₂

Suresh Chandra: *Astrophys. Space Sci. (Netherlands)* **98**, 269 (1984).

- (i) Far-infrared detection of methylene
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