



CURRICULUM VITAE

S. K. PANDEY

Date of birth: January 01, 1954

Parents: (late) Shri Net Ram Pandey (farmer) & (late) Smt Khelan Bai, Village- Borid, Dist. – Durg, CG.
Marital status: Married; wife: Sarita Pandey (Principal, School Education, CG Govt), three children (two daughters: Shefali (M Sc, married to Saurabh Dubey, lives in USA) & Shivani (M C A, married to Ashwin, lives in Pune), and a son: Shishir (married), Sqd. Leader, Indian Air Force))

Present position (since March 02, 2009; second term w.e.f. 02-04-2013):

**VICE-CHANCELLOR
PT. RAVISHANKAR SHUKLA UNIVERSITY, RAIPUR**

Parent department : School of studies in Physics & Astrophysics, Pt Ravishankar Shukla University as Professor

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Education :

Had early education at Borid, Higher Secondary School education from Jamgaon(M) before moving to Raipur for Higher Education.

- Higher Secondary (Physics, Chemistry, Mathematics), first division, distinction in Physics, Chemistry, Mathematics: M.P. Board of secondary education, Bhopal, 1970, **rank within hundred.**
- B. Sc. (Physics, Chemistry, Mathematics), first division, **first rank in the order of merit: Ravishankar University, Raipur, India 1973.**
- M. Sc. Physics (Solid State Physics), first division, **first rank in the order of merit: Ravishankar University, Raipur, 1975.**
- Ph. D. Physics (Astrophysics): Ravishankar University, Raipur, 1980, **the work was carried out at TIFR, Bombay, title of the Ph.D. thesis : “Study of Penetrative Instabilities”, supervisor : Prof S M Chitre (TIFR, Mumbai)**

Professional Career:

- Lecturer, Govt. Digvijai College, Rajnandgaon, 1976 - 83.
- Lecturer, Govt. Science College, Raipur, 1983-85.
- Lecturer, Ravishankar University, Raipur, 1985-89.
- Reader, Ravishankar University, Raipur, 1989 -98.
- **Professor, Swami Ramanand Teerth Marathwada University(SRTMU), Nanded - 431602(M.S.), August 16, 1996 - February 7, 1998 (on lien from Ravishankar University, Raipur).**
- **Professor, Pt Ravishankar Shukla University, Raipur, since July 1998, Head, Oct. 2008-Feb 2009.**

- **Teacher Fellow, Theoretical Astrophysics Group, Tata Institute of Fundamental Research (TIFR), Bombay, 1977-80 on leave from Govt. Digvijai College, Rajnandgaon, for carrying out research work under the supervision of Professor S. M. Chitre (TIFR) under the Faculty Improvement programme of the University Grants Commission(UGC).**
 - **Teaching experience:** Under graduate: ~ 09 years, Post graduate: ~ 25 years
 - **Subjects taught** at P.G. level include Classical Mechanics, Astronomy & Astrophysics, Nuclear Physics, Statistical Physics, Classical Electrodynamics, and Plasma Physics.
 - **Field of Research: Astronomy & Astrophysics; Surface Photometry of Galaxies and Image processing, Photometry of Variable stars: RS CVn and chromospherically active stars..**
 - **Important contributions/achievements**
- Research career spans about three decades since I joined **Theoretical Astrophysics Group at Tata Institute of Fundamental Research (TIFR), Bombay in July 1977** as teacher fellow on leave of absence from Govt. Digvijai College, Rajnandagaon for my doctoral work under the supervision of Professor S. M. Chitre of TIFR. Broad area of my research activities is in Astronomy & Astrophysics (A&A), and during last three decades of research career I have worked in a variety of topics in A&A ranging from Stellar Physics: Sun and Stars to extragalactic astronomy. The work done during the first decade relates to theoretical modeling of convective modes in Sun & Stars, and Magnetoconvection. My research interest in later years has been in the area of Observational Astronomy; study of variable stars using small telescopes, and surface photometry of galaxies using bigger (>1m) optical telescopes within the India as well as in abroad. Research activities are focussed mainly in areas of (1) Study of Chromospherically active stars as a part of CSIR sponsored research projects, and (2) Multiwavelength surface photometry of early-type galaxies to investigate properties of dust in extragalactic environment. The work has led to publication in refereed Journals in A&A as well as presentation in several national and international conferences.
- **Observational Astronomy; training and career building in Astronomy for students: While I made a successful shift into the area of observational astronomy, and credit for this goes to IUCAA faculty for their encouragement and support, I have made sincere efforts in motivating and training several students of the department in observational astronomy, took research projects from agencies like DST, CSIR etc to support research students. As a result, some of the students got selected in other research institutes for research program in Astronomy, while some of them completed their doctoral work at Raipur. All of them have opted for a career in Astronomy and are now well placed in research institutes in India as well as in other countries.**

Work done as Visiting associate of IUCAA was reviewed by a panel of experts who appreciated the modest contribution made by me in the field of Observational Astronomy in the University sector. It was indeed overwhelming for me to read following lines on me from the Director's report in IUCAA Annual Report-2004-05 :

“I wish to specially mention S. K. Pandey of Pt. Ravishankar Shukla University, Raipur, and congratulate him most warmly on his pioneering effort in Observational Astronomy in the university sector. He has motivated and trained about a half dozen young astronomers who are working at various observatories. It is by all means, a very good contribution to observational astronomy.”

- Students of the department are encouraged to apply for summer school/programme, JEST, YAM/ISYA, research programme etc of various institutes in the country. As a result several students of the department regularly participate in summer Schools/YAM etc, and some of them have opted/ intended for a career in Astronomy.

It is indeed a matter of pride that

- **Sudhansu Barway was selected for participation in International school of Young astronomer (ISYA), Thailand, during January 2001.**
- **Laxmikant Chaware was selected for participation in International school of Young Astronomers (ISYA), Malaysia, March 4-24, 2007. Further he has been selected for participation at COSPAR meeting to be held at Kula-Lumpur, Malaysia during June 1-14, 2008.**
- **Laxmikant Chaware participated in JSPS-DST Seminar and 8th CPS International School “Recent and Future Advances in Observational Astronomy” held at Kobe, Japan during September 26-30, 2011. Presented a poster entitled “Isophotal shapes of early-type galaxies to very faint levels”.**

- **Teaching and Research in Astronomy using small telescopes:**

Played an important role in the installation of Computerized Celestron telescope C-14 which sparked the beginning of observational Astronomy in the Physics Department since 1991-92, and a new set of activities were initiated, namely, teaching and research in Astronomy using the small optical telescopes of the Department. During the period 1994-2002 this observing facility was maximally used not only for carrying Observational project work by M Sc students as a part of their course but also for initiating research work on active stars. I have been primarily responsible for promoting research activities in the University in the field of variable stars: chromospherically active stars using small (14”-16”) telescopes which resulted in research articles published in referred astronomical journals of repute.

Involved in the preparation as well as presentation of the DST-FIST proposal which helped the Physics Department to earn a grant of Rs 30 lacs for 2005-08. Out the DST-FIST grant Rs 15 lacs was sanctioned for augmentation of observing facilities; two new telescopes (Celestron CGE series CGE 800 & 1400) along with SSP-3A Photometer, CCD imaging camera and spectrograph were procured using the DST-FIST grant. M.Sc. students have started using CGE800 telescope for carrying out for their observing projects as a part of their course work. *The University is in the process of building an Observatory building with a Dome for housing the 14” telescope. A 4.5m dome has been procured from Sirius Observatories, Australia, and will be installed soon on the terrace of the Physics building. This will help in resuming research activities on chromospherically active stars. Likewise, the new CCD spectrograph will be used for introduce new projects on spectroscopic observations which were not possible earlier.*

Invitation from the President, Comm. 46, Astronomy for the Developing World of IAU to present an invited paper on “Teaching and Research in Astronomy using Small Aperture Optical Telescopes” at the IAU GA held at Prague, Czech Republic during August 2006 (S. K. Pandey, 2007) is a mark of recognition to me as well as to the University for the sincere and dedicated efforts in cultivating observational Astronomy amongst students in the University.

Also invited to give a talk on “The use of telescope to supplement class room teaching in Astronomy” at the 10th meeting of APRIM of the IAU, August 1-6, 2008, held at Kunming, China.

- A good no. of research papers are published in refereed Journals of repute such as Astrophysical Journal(ApJ), Monthly Notices of Royal Astronomical Society(MNRAS), Astronomical Journal(AJ), Astronomy & Astrophysics(A&A),and Solar Physics etc.

- Some of research papers have been cited by other researchers too; Solar Physics paper of 1981(Solar Phy, 70, 67) is cited in Annual Review of Astronomy & Astrophysics(ARA&A) Vol 29,627(1991).
- The paper on Properties of Dust in early-type Galaxies(A&A, 461,103,2007) has been referred in The AGB newsletter No. 115, 10(Dec. 2006) and is well cited by people working in this field.
- The article on BVR photometry of a newly identified RS CVn binary star HD61396 published in New Astronomy, 10, 109 (2004) has led to further study on this object by Griffin et al published in New Astronomy (11, 431, 2006) and it has been identified as an unusual mass-transfer RS CVn binary system.

- **Computing Facility in the Physics Department :**

Involved in creating state-of-the-art computing facility in the Department with grants received from sponsored research projects from DST, CSIR, UGC and DST-FIST for the use of students and faculty members. During 1991-1996 SUN SPARC stations along with accessories were procured as part of DST and CSIR sponsored projects. The Department now has fairly good no. of PCs all in a network; IMAGE PROCESSING software installed on LINUX platform. **As part of IRC established in the Physics Department, a set of PCs along with two servers with preinstalled data archives have been added during 2009-10 to promote research activities in Astronomy in the University.**

- **Honours/Awards/Scholarships:**

- National Merit Scholarship for the B. Sc. course (1970-73).
- National Merit Scholarship for the M. Sc. course (1973-75).
- University Gold Medal for first position in B.Sc. in the year 1973.
- University Gold Medals for first position in M.Sc. in Physics, First position in all science subjects, and first position in all subjects in the post graduate courses in the University in the year 1975.
- Silver Medal and a certificate of merit from Rotary Club of Raipur for First position in B.Sc.
- Teacher Fellowship awarded by University Grants Commission (UGC) under the scheme of the Faculty Improvement programme for carrying out research work at Tata Institute of Research (TIFR), Bombay, under the supervision of Professor S. M. Chitre of the Institute (on leave of absence from Govt. Digvijai College, Rajnandgaon).
- **IAU/US-NSF Award, to participate in the XX general Assembly of the IAU, Baltimore (USA), August 2-11, 1988.**
- **Visiting Associate of Inter-University Centre for Astronomy and Astrophysics (IUCAA), Pune since July 1990 ; the term has now been extended up to June 2011.**
- *Coordinator of IUCAA Reference Centre (IRC) setup by IUCAA, Pune for promotion of teaching & research in Astronomy & Astrophysics in this region. It is one of the four centres recently setup by IUCAA in recognition of the work being done by faculty members of the Physics department of the University.*
- **Nominated by UGC for the Gujar Mal Modi Innovative Sciences & Technology Award, 2007.**

- **Membership of Professional Organizations and other Bodies:**

- International Astronomical Union (IAU),Astronomical Society of India (ASI), Indian Physics Association (IPA)
- **Scientific Organizing Committee of the XVI Annual Meeting of ASI held at IUCAA, Pune during Oct 24-28,1994.**

- Users' Committee of IUCAA for the period 1995-97.
- National Coordination Committee setup by Indian National Science Academy (INSA) For the Total Solar Eclipse, Oct 24, 1995.
- Scientific Organizing Committee for the workshop on "Astronomy with moderate Size Optical telescope" held at UPSO, Nainital during April 7-9, 1997.
- **National Committee of the International Astronomical Union (IAU) of the Indian National Science Academy (INSA), New Delhi for the period 1997-2000.**
- **Scientific Organizing Committee of XIV meeting of Astronomical Society of India for the period 1998 - 2000.**
- **Nominated member of Scientific Advisory Committee (SAC) of IUCAA, Pune for the period January 2004- December 2008..**
- Chairman, Board of Studies in Physics, Pt Ravishanakar Shukla University for the period July 2005-July 2008.
- Member, Academic Council & Faculty, Pt Ravishanakar Shukla University with effect from July 2005
- **Member, Time Allocation Committee (TAC) for IUCAA Girawali Observatory (IGO), IUCAA, Pune, 2006-2008.**
- **Member, National Working Group for the International Year of Astronomy(IYA)-2009 of INSA.**
- **Nominated member of Central Connectivity Monitoring Committee(CCMC) of INFLIBNET, 2009-11**
- **Vice-President of Astronomical Society of India(ASI) for 2010-12.**
- **Expert member, DST-INSPIRE, 2012-**
- **Member, Committee setup by UGC for Accreditation, 2013-**
- **Member as UGC Chairman's nominee, Executive Council, Central University, Sagar(M P.), 2013-**
- **Member, IUCAA-Governing Council, 2013-**
- **Member, Court, G G Central Univ, Bilaspur, 2014-**
- **Member, Court, Tribal Univ, Amarkantak, 2014-**
- Member, UGC inspection committee for G D Goenka University, August 2-3, 2014 (Chairperson : Prof H P Dikshit)
- Member, National Advisory Committee(NAC), MHRD

➤ **Current research interests**

(a) Multiwavelength surface photometry of early-type galaxies :

I have been working in the exciting field of imaging observations of Galaxies and image processing since 1991 in collaboration with Prof. A.K. Kembhavi of IUCAA. The major scientific objective of the programme is to study various aspects of the structure, dynamics and evolution of galaxies, and the effect on these due to interactions with other galaxies. At the present I am involved in the multi-wavelength imaging of galaxies with 2-D array detectors to obtain the surface distribution of light, the analysis of which provides structural parameters, the ratio of bulge and disk luminosity, distribution of colors and small scale structures like dust, shells and so on.

- **Multicolor surface photometry of lenticular galaxies:**

Lenticular galaxies as a class represent a morphological transition between Elliptical and early-type spiral galaxies. There are several important issues related to their origin and relationship with ellipticals and bulges of spirals. To address these issues a sample of 34 lenticulars were observed in optical and near infrared bands using the 2.1m telescope at Mexico. Isophotal shape analysis was used to obtain brightness profiles, color profiles and color gradients. The color gradients are found to be negative indicating that colors of lenticular galaxies become redder towards the centre as is the case with elliptical galaxies. The results also indicate a good correlation between B-V and B-R color gradients. This work was carried out in collaboration with A K Kembhavi, Y. D Mayya and S Barway(AJ 2005) and the data was used for the investigation of fundamental plane of lenticulars in relation to that of elliptical.

- **Dust and multiphase ISM in early-type galaxies :**

Studying properties of dust in extragalactic environment provides useful clues for the understanding the origin and fate of dust in external galaxies as well as for the subsequent evolution of host galaxies. With this broad objective in mind multiband data for sample of 26 early-type galaxies containing dust in various morphology were analyzed as a part of an ongoing research programme led by S K Pandey . Important results are incorporated in a paper published in A&A (2007).

With the objective of establishing evidence for the multiphase(hot, warm and ionized, cool molecular gas and dust) ISM in elliptical galaxies a well defined sample of 34 elliptical galaxies was chosen from Brown and Bregman (1998) for carrying out observations in optical, infrared and x-ray bands. A subsample of 18 galaxies was observed in near-infrared (NIR)-JHK- bands using 3.5m NTT and near-IR camera SOFI at the European Southern Observatory(ESO) during December 2002(one night) and during May 2005(three nights). These observations will be the first of its kind for a well defined large sample, and will lead to a detailed understanding of the nature, origin and evolution of ISM in elliptical galaxies. People involved in this joint collaborative programme include A. K Kembhavi, S. Raychaudhary and the group led by S. K. Pandey at Raipur.

(b) Galaxies from Large Format Camera (LFC) survey fields:

Huge amount of data from a variety of sky surveys are available in the archive for further investigation. It is planned to make use of multiwavelength data on galaxies from LFC fields as a part of the collaboration, which were originally obtained to find very high red shift quasars. The LFC survey has been done using the Large Format Camera on 200-inch Hale telescope at Mount Palomar Observatory. The multi-wavelength study of statistically significant sample of detected objects from this survey can address wide variety of issues in A&A, including galaxy formation and evolution, AGN structure and demographics, prevalence and nature of features (like, spiral arms, shells, rings etc) in galaxies, low surface brightness galaxies etc.

At present redshifts are available only for a few bright galaxies from the field. A survey is planned to get redshifts and spectral information for large sample of galaxies using 3.9m Anglo Australian Telescope (AAT). The sample contains ~270 galaxies per field which are brighter than 20.5 magnitude in i band. Use of multifiber spectroscopy, AAOmega, on AAT was proposed, which can be used to get spectra of ~400 targets at a time within field of view of 2 degrees. One of the LFC fields, SDSS1208 was observed for one hour in service mode, on June 22, 2006 using AAT.

The same field was again observed on March 27, 2007 in service mode for 1.5 hours. The spare fibers, after allocation of target from the field were used to allocate the galaxies selected from the SDSS survey. This observation yielded spectra of 235 galaxies, for which data analysis is in progress. This is collaborative research programme involving A. K. Kembhavi, Russell D. Cannon, Ashish Mahabal and the group at Raipur.

(c) Teaching and Research in Astronomy using small telescopes:

Actively involved in promoting research activities in the University in the field of variable stars: chromospherically active stars using small (14"-16") telescopes which resulted in research articles published in referred astronomical journals of repute. This work earned him recognition from IUCAA in terms of training man power in Observational Astronomy who are now working at various institutes/observatories as well as from International Astronomical Union (IAU).

- **Study of Chromospherically Active stars :**

Short-term variations in newly identified active stars, namely HD52452 and HD 61396:

HD 52452 is one of the shortest period ($0^d.42304$) non-eclipsing chromospherically active stars discovered so far. Analysis of its BVRI photometric data obtained during two observing seasons during 2000-01 reveals the existence of two minima separated from each other about a half period in phase. This behavior is possibly due to two spots on the stellar surface. A comparison of the new data with previously reported observation shows significant variation in amplitude, but the phases of the two minima, and thus the positions of the two spots remained quite stable during the two sets of observations. Very short photometric period makes this system very interesting for studying the evolution of spots on the stellar surface over a long time scale (IBVS, No. 5553, 6 August 2004). Likewise, the newly discovered RS CVn binary star HD61396 (MNRAS, 2000 Vol 314, Page 733) was further monitored during the observing season during 2001. The new BVR photometry revealed significant evolution in the shape and amplitude of the light curve, and thus further confirming it to a RS CVn-type system (New Astronomy, 2004).

- **Identification of new chromospherically active stars :**

A detailed analysis of photometric data on five suspected active stars, namely, HD85945, HD20277, HD39286, HD88639 and HD191179 selected on the basis of their intense X-ray emission were carried out. Low-resolution spectroscopic observations in H α and CaII Infrared triplet (IRT) of these stars carried out using HCT, the 2m telescope at Hanle, during 2004-2005 for seven nights were also analyzed. All stars except HD85945 are found to exhibit significant photometric variation typical of spotted stars. All except HD85945 are also found to show variable absorption/emission in H-alpha and CaII IRT region. This together with the observed photometric variation seen in the four of the five stars suggests that these are variable stars possibly belonging to the class of chromospherically active stars. This work formed a part of doctoral work of Mr. Sudhanshu Barway, who worked under my supervision and was awarded Ph D degree of the University during Oct. 2006.

- **Collaborative research Programme:**

1. An ongoing collaborative research programme on "Surface Photometry of galaxies" with Professor A. K. Kembhavi of IUCAA, PUNE and persons from different observatories. The attention is now focussed in studying complex, multiphase interstellar matter (ISM) in early-type galaxies with a view to investigate the nature and evolution of dust and gas in them.
2. Collaborative programme on The Multiphase ISM in nearby ellipticals with Dr S Ray Chaudhury (UK), Dr Ponman (UK) and Prof A. K. Kembhavi (IUCAA). An observing proposal based on this project was allotted nights during December 1/2, 2002 for near-IR observation using 3.5m NTT/SOFI at ESO, Chile. Dr Ashish Mahabal a PDF at Palomar Observatories is also involved in the programme. An observing proposal on this programme submitted for NTT/SOFI at ESO earned three nights during May 14-16, 2005 again, and a set of 9-10 elliptical galaxies were imaged in NIR JHKs bands.
3. Collaborative research programme on studies of galaxies from LFC field involving A. K. Kembhavi(IUCAA), Russell D. Cannon (AAT), Ashish Mshabal (Caltech, USA) and the group at Raipur.

- **Sponsored Research Projects:**

(a) **Principal Investigator in following research Projects:**

1. **Optical Observations of Galaxies and Astronomical Image Processing**, sponsored by the Department of Science and Technology (DST), New Delhi. Total Cost: RS 6.05 lacs, duration: November 1991 to November 1995(completed).

2. **Photometric Study of RS CVn Binary Stars**, sponsored by Council of Scientific and Industrial research (CSIR), New Delhi. Total Cost: Rs 5.92 lacs duration: January 1, 1995 to December 31, 1997 (completed).

(3) **Joint collaborator in the INDO-FRENCH research Project entitled Galaxy Formation : the AGN-Spheroid Connection, with Professor Bruno Guiderdoni of Institut d' Astrophysique de Paris, France and Professor A. K. Kembhavi, IUCAA, Pune, India as Principal Investigators. The project was until January 31 2007(completed).**

(4) **A Study of Stellar Activity in Chromospherically Active Stars , sponsored by CSIR, New Delhi for the period April 2004-March 2006 with total cost of approx Rs 7 lacs (completed).**

(5) **“Morphological and Spectral properties of hot gas in early-type galaxies” sponsored by ISRO, India. Total cost: ~Rs 6 lacs, co-investigator with Dr M K Patil, SRTM Univ as PI. (completed).**

(6) **“Photometric and Spectroscopic studies of Galaxies in deep survey fields” sponsored by ISRO-RESPOND, India. Total cost : ~Rs 18 lacs, April 2008-March 2011 (completed).**

➤ **Telescope Time Awarded :**

During the period 1990-2014 observing proposal submitted by S. K. Pandey along with collaborators has earned a number of observing nights in 1m class, 2m class telescopes available in national Observatories at Nainital, Kavalur, Mt. Abu, Hanle and IGO as well as bigger telescopes in International Observatories at Las Campanas Observatory (Chile, 1994), European Southern Observatory (ESO, Chile) and Anglo Australian Observatory(AAT, Australia). Some important ones include :

- 3.5 New Technology Telescope (NTT) of European Southern Observatory (ESO) with SOFI near-IR camera for JHK imaging of a sample of elliptical galaxies with total 4nights (Dec. 1/2, 2002, May 14-16, 2005).
- 3.9m Anglo Australian Telescope (AAT). Some of the LFC fields were observed in service mode, on June 2006, March, 2007 and Oct. 2007 using AAT for spectroscopic observations for the determination of redshifts of galaxies identified in the field.

➤ **Research Supervision:**

1. **Ph.D. degree awarded: 07**

(i) **Dr.(Smt.) Zehra Hasan, topic : Study of Parametric Instabilities, March 1997(Ravishankar University, Raipur). She is working as Head, Department of Physics at Mahila Mahavidyalaya, Bhilai.**

(ii) **Dr. Devendra Sahu, topic : Photometric studies of some early-type galaxies, August 1999(Ravishankar University, Raipur). He is working as Scientist D at Indian Institute of Astrophysics, Bangalore.**

(iii) **Dr. Padmakar Parihar, topic : Photometric Studies of RS CVn binary stars, January 2001(Ravishankar University, Raipur). He is working as Scientist D at Indian Institute of Astrophysics, Bangalore.**

(Dr Sahu and Dr Parihar are with Indian Institute of Astrophysics and are involved with 2-m aperture remotely operated optical-infrared telescope at Hanle)}

(iv) **Dr. Madhav K. Patil, topic : Multiwavelength study of Dust Properties in Early-type Galaxies, 2004(SRTM University, Nanded). He is lecturer in SRTM University, Nanded.**

(v) **Dr S. Barway, topic "A study of stellar activity in Chromospherically active stars" 2006, (Pt Ravishankar Shukla Univ., Raipur). Currently he is a Scientist at SAAO, Cape town, South Africa.**

(vi) **Dr Laxmi Kant Chaware**, topic "Multi-wavelength Study of Galaxies using Deep Survey Fields", Feb 2014, (Pt Ravishankar Shukla University, Raipur).

(vii) **Ms Samridhi Kulkarni**, topic "Multiband photometry of dusty Elliptical and Lenticular Galaxies". Sept. 2014, (Pt Ravishankar Shukla University, Raipur)

2. Ph. D students : 02

(i) **Mr Sheetal Sahu** is registered with Pt. Ravishankar Shukla University, Raipur, on "Multiwavelength study of a sample of radio loud elliptical galaxies".

(ii) **Mr Amit Tamrakar** is registered with Pt. Ravishankar Shukla University, Raipur, on "Multiwavelength isophote shape analysis for a sample of early-type galaxies".

➤ M Sc./M Phil Project Supervision:

As a part of M.Phil. Course in Physics three students did their project work on various topics in theoretical Astrophysics. One student is working for his M Phil dissertation during 2008-09.

About 5-10 M Sc. students complete their **project works on Astronomy** each year. The project work involves obtaining light curves of short period variable stars of various classes using the observing facilities in the University at Raipur or topics involving image processing and data analysis of the archival data.

➤ Visits Abroad:

1. **U S A** : to participate in the XX General Assembly of the IAU held at Baltimore, during Aug 2-11, 1988. The visit was sponsored by IAU and Indo-US programme.

2. **Ukraine** (former USSR): for paper presentation at the IAU Symp. No 138 on Solar Photosphere held at Kiev during May 15-20, 1989. The visit was sponsored by Ravishankar University and INSA, New Delhi.

3. **Chile**: for carrying out observations at Las Campanas Observatory of the Carnegie Institution of Washington (USA) during Sept. 5- 22, 1994. The Visit was sponsored by the Carnegie Institute, IUCAA and Indo-US programme.

4. **France**: To participate in the Les Houches School on Starbursts: triggers nature and evolution, during Sept 17-27, 1996, the visit was sponsored by the School, IUCAA and SRTM University, Nanded.

5. **France**: Visit to IAP, Paris during Oct 04 – 19, 2005 as a part of Indo-French project.

6. **Czech Republic**: participation and paper presentation at XXVIth general Assembly of International Astronomical Union (IAU) held at Prague during August 14-25, 2006.

7. **China** : invited to give a talk at the 10th Asia-Pacific Regional Meeting (APRIM), Kunming, China, August 1-6, 2008.

➤ Invited lectures etc.; some important ones include:

- "Isophotal Distortions and Faint Structures in Elliptical Galaxies" at the INDO-US Workshop on Elliptical Galaxies: Structure and Dynamics held during November 23 - December 7, 1995, IUCAA, Pune.
- "Demo-cum-lecture on Image processing" at the workshop entitled Data bases, Data Visualization and Image Processing held during Nov. 15-24, 1998 at IUCAA, Pune.
- "Dust in Galaxies" at the IUCAA Decennial Year Meeting held during Jan 7-11, 1999 at IUCAA, Pune.

- “Galaxy Photometry” at the workshop on Observational Programmes with 2m class Telescope held during Oct.25-28, 1999 at UPSO, Nainital.
- **Lecture delivered at Physical Research Laboratory, Astrophysics Division, Ahmedabad on the topic "Dust in Early-type galaxies" during February 2000.**
- Lectures (two) given at the workshop on Astronomy with Small Telescopes, Jan 6-10, 2003, IUCAA, Pune.
- Lectures given at the workshop on Observing with small telescopes held at IUCAA, Pune during August 29-31, 2005
- **Lecture on “Properties of Dust in early-type Galaxies” at the workshop on Science with Himalayan Chandra Telescope (HCT), IIA, Bangalore, Jan 21-22, 2006.**
- “Multiband Photometric Studies on Dusty early-type galaxies” at the Telescope Dedication Symposium, IUCAA, Pune during May 13-14, 2006 (dedication of IUCAA Girawali Telescope).
- **“Teaching and Research in Astronomy using Small Aperture Optical Telescope” at IAU XXVIth GA, SPS5- Astronomy from Developing Countries, Prague, Czech Republic, August 14-25, 2006.**
- **“Surface Photometry of Galaxies” at the Indo-French Training School in Optical Astronomy held at IUCAA, Pune Feb. 6-26, 2007**
- **“The use of Small Telescope to supplement class room teaching in Astronomy” at the 10th Asia-Pacific Regional Meeting (APRIM), Kunming, China, August 1-6, 2008.**
- **“Astronomical projects using small optical telescopes”, lecture given at the workshop organized by MPCOST, Bhopal, June 20-21, 2009**
- **“ISM in early-type galaxies” presented at the International Conference on Interstellar Dust, Molecules and Chemistry, Nov. 22-25, 2011 held at IUCAA, Pune.**
- **“Dust and Multi-phase ISM in nearby early-type Galaxies” presented at the International Workshop on Advanced Materials and Astrophysics, Feb 21-22, 2012 held at the SoS in Physics & Astrophysics of the University.**
- **“ Science Awareness Activities in Universities” talk given at scientific meeting “jayant@75”, IUCAA, Pune, July 18-19, 2013.**

➤ **Public outreach/Science Popularization activities**

(a) **Popular Lectures in Astronomy** in Schools/Colleges at several occasions (Summer Schools, Refresher Courses, INSPIRE Camps etc); some of the recent ones are listed here.

- **“Galaxies; ours and beyond”, lecture given at RLT Science College, Akola, National Workshop, Sept 24-25, 2010.**
- **“Lifecycle of stars”, lecture given at Hindol College, Odisha, Jan. 21, 2011.**
- **“Teaching of Astronomy” invited talk during 29th ASI Meet, Pt Ravishankar Shukla University, Raipur, Feb. 23-25, 2011.**
- **“The Dynamic Universe”, invited talk at Young Scientists Meet, Bastar University, Jagdalpur, Feb 28-March1, 2011.**
- **“ Supernovae and the Cosmic Expansion; Nobel Prize in Physics-2011”, lecture given at Govt Science College, Durg, Oct. 11, 2011.**
- **Teaching and Research in A&A at Pt Ravishankar Shukla University, lecture given at ARIES, Nainital, Oct. 17, 2011.**
- **20th century Milestones and Challenges for 21st century in Astronomy”, invited talk at Young Scientists meet, Sarguja University, Ambikapur, March 2012.**
- **A Glimple of the Universe”, lecture given at SCERT, Raipur: Workshop on Transit of Venus, May 18-20, 2012.**

- “The story of our Universe”, lecture given at Saraswati Shishu Mandir, Jamgaon(R), May 30, 2012.
- “Astronomy using small aperture optical telescopes” lecture given at Nehru Planetarium, during March 4-5, 2012.
- “The Expanding Universe; is it accelerating?” lecture given at Sambalpur University, March 2012.
- “Nucleosynthesis in Stars”, lecture given at Bhilai Mahila Mahavidyalaya, National workshop, Feb 6-7, 2012
- “Teaching & Research of A&A at Pt Ravishankar Shukla University, Raipur, lecture given at Associates’ Fest, IUCAA, June 29, 2012.
- “End states of stars”, lecture given at the INSPIRE Camp, Pt Ravishankar Shukla University, Nanded, Oct 8, 2012.
- “Amazing world of Astronomy” lecture given at Rungta College of Engg. & technology, Aug. 25, 2012.
- “A fresh view of the Universe”, lecture given at GM College, Sambalpur, Odisha, Sept. 29, 2012.
- “How well do we know our Universe?, lecture given at Govt Chhattisgarh College, Raipur (national workshop on mathematics), Jan 17, 2013.
- “Science Awareness Activities in Universities”, lecture at Jayant@75 organized at IUCAA, Pune, July 19, 2013.
- “Reforms in Higher Education”, lecture at State Admin. Academy, Sept 23, 2013.
- “Let us know our Universe”, lecture at the workshop “Eyes in ISON” Oct 5, 2013.
- “Life-Cycle of Stars”, lecture given at The Science Centre, Raipur, Oct 8, 2013.
- “A Journey into our Universe”, lecture at Academic Staff College, Oct 26, 2013.
- “Amazing World of Astronomy”, lecture given at Govt Science College, Raipur, Jan 20, 2014.
- “The Interface between Infinitesimal and Infinite; a Cosmic Connection, lecture at the Rotary Club of Raipur, Feb 14, 2014.
- “A Fresh View of the Universe: present status and challenges ahead”, Colloquium at Physics Department, IIT(BHU), Varanasi, Feb 24, 2014.
- “Where do we come from ?; Tracing the cosmic connection”; Science day programme, SoS in Physics & Astrophysics, March 8, 2014.
- “A fresh view of the Universe: tracing our cosmic connection”, Inaugural lecture at Rungta College, Bhilai, August 4, 2014.
- “An Astronomer’s view of the Universe”, lecture at the golden jubilee inaugural function, Govt PG College, Bhatapara, September 10, 2014.

(b) Radio talk/interview:

Popular Talks on All India Radio (AIR), Raipur on various topics in science, in Hindi as well as in the local dialect (Chhattisgarhi) since 1985. Some of recent radio talks include :

-An interview on All India Radio on “Solar Wind”, during February 2002.

- An interview on All India radio on “Solar Oscillations and Internal Structure of the Sun” (in Hindi), aired on December 3, 2004.

-Prepared a Hindi Roopak on “Bharitaya Antariksh Karyakrama ke Vividh Aayam” for All India Radio, aired on Feb 19, 2006.

- Radio talk in Hindi on “Prithvi aur Dhoomketu me Takkar; Vinash bhi hai aur Jeevan ki utapti bhi”, National broadcast :Vigyan Bharati ,April 2006.

-An Interview on AIR-Vigyan Lok on “ Akash Ganga kyon sikud rahi hai”, April 2, 2012

-An interview on AIR-Vigyan Lok on “ Bharat ka Mangal Abhiyan(India’s Mars Mission)”, - August 20, 2012.

-An interview on AIR-Vigyan Lok on “ Dark Matter, & Dark Energy in the Universe ”, June 2, 2014.

(c) Sky gazing programme:

Regular students of the department, students from local Schools/Colleges as well as general public visit the department during nights when M Sc students are busy in carrying out their observational projects, to have a view of surface features of the moon, Jupiter and its moons, Saturn and its rings using the telescopes that the department has. Whenever special events are notified/spotted in the sky, sky watch programme are specially organized in the department.

(d) Organizing Lectures by peers

Have been organizing lectures by eminent scientists in the department as well as in the region with view to expose the students in the region to front line research areas in Physics as well as in Astrophysics. **Some important ones include, lectures by Padmashri Prof T P Padmanabhan during Fen. 2008, and by Padmavibhushan Professor Jayant Narlikar as a part of activities for the International Year of Astronomy (IYA-2009) during Feb. 9-15, 2009.**

Lecture series by Professor J V Narlikar and Dr (Mrs) M Narlikar at Raipur and neighbouring institutions, during April 15-19, 2011.

Lectures by experts :

1."Radio Waves and the Universe from Big Bang to Black Holes and the Giant Metrewave radio Telescope near Pune", by Prof. Govind Swarup, Jan 16, 2010, at Vivekanand Vidyapeeth, Raipur.

2. "Indian Defence Research: Opportunities and Challenges" by Dr V K Saraswat, Chairman, DRDO, at Pt Ravishankar Univ, Raipur, Jan 25, 2011.

3. "Indian Space Programme"by Dr K Radhakrishnan, Chairman ISRO, at NIT, Raipur, Feb 01, 2011 And also at the University, Feb 02, 2011.

4. “ Science Landscape in Changing India, by Dr T Ramasami, Secretary, DST, Medical College Auditorium, Jan 14, 2012.

5. “Generic to genomic Medicine; India’s journey for affordable healthcare” by Dr S Bramhachari, DG CSIR, Pt Ravishankar Shukla University, May 29, 2012(Ravishankar Shukla Memorial Lecture)

➤ **Organization of Workshop etc.**

- **Organized a workshop on Structure and Dynamics of Galaxies in the department during Sept. 27-30, 2001. The workshop was sponsored by IUCAA, Pune and the University.**
- **Organized a workshop on Astronomy with Small Telescopes during Jan. 6-10, 2003 at IUCAA, Pune. The workshop was sponsored by IUCAA , Pune.**
- Also, actively involved in the organizations of the following Conferences/ workshops etc hosted by the Department.
 1. XII Annual Scientific Meeting of Astronomical Society of India (ASI) held at Ravishankar University, Raipur during Dec. 2-5, 1987.
 2. IUCAA Workshop on Line and Continuum Emission from Quasars and AGN, held at Ravishankar University, Raipur during Dec. 1991.
- Coordinated several workshops in ASTRONOMY conducted by IUCAA, Pune at several Universities/Colleges

- **ASI-11, XXIXth meeting of ASI hosted by Pt Ravishankar Shukla University, Feb. 23-25, 2011.**

➤ **Research Publications: 33**

- **Published in Journals:**

1. **S.K.Pandey**, H.M.Antia and S.M.Chitre, Instabilities in a Penetrative Atmosphere: Astrophysics and Space Science, Vol. 63, p103-115 (1979).
2. **S.K.Pandey**, On Penetrative Instabilities: Astrophysics and Space Science, Vol. 71, p499-506 (1980).
3. D.Narasimha, **S.K.Pandey** and S.M.Chitre, Convective Instabilities in the Solar Envelope: J.of Astrophysics and Astronomy, Vol. 1 p166-175 (1980).
4. H.M.Antia, S.M.Chitre and **S.K.Pandey**, Granulation and Supergranulation as Convective Modes in the Solar Envelope: Solar Physics, Vol. 70, p67-91 (1981).
5. **S.K.Pandey**, The Effect of Finite Electrical Conductivity on Compressible Magnetoconvection: Astrophysics and Space Science Vol. 152, p15-22 (1989).
6. H.M.Antia and **S.K.Pandey**, A Model for Stellar Surface Convection and Photospheric Line Asymmetries: Astrophysical Journal, Vol. 341, p1097-1107 (1989).
7. V711 tau, UX Ari and IM Peg: Padmakar and **S. K. Pandey**, BVR Photometry of the three RS CVn Binary Stars: Astrophysics and Space Science, Vol 235, p337, 1996.
8. Padmakar and **S.K.Pandey**, A study of long term photometric variation in the RS CVn Star V711 Tau: 1996, Bulletin of ASI Vol. 24 p717.
9. D. K. Sahu, **S. K. Pandey** and A. K. Kembhavi, A highly flattened stellar disk in the elliptical galaxy NGC4564: 1996, Bulletin of ASI Vol. 24, p777.
10. D.K. Sahu, **S.K. Pandey**, D.K. Chakraborty, A.K. Kembhavi & Vijay Mohan, Nuclear dust and outer shells in the Elliptical Galaxy NGC 7562: Astronomy and Astrophysics, 1996, Vol. 314, p721.
11. D.K. Sahu, **S.K. Pandey** and A.K. Kembhavi, Dust Properties of NGC 2076: 1998, Astronomy & Astrophysics vol. 333, 803.
12. Padmakar and **S.K. Pandey**, Stellar Activity in the RS CVn Binary Star UX Arities: 1999, Bulletin of ASI, vol. 27, p117.
- 13 R. C. Agrawal, Mohan L. Verma, R. K. Gupta, R. Kumar, M. L. Verma and **S. K. Pandey**, Estimation of mobile ion concentration in some silver ion conducting solid electrolyte systems by dc polarization/depolarization studies: Solid State Ionics: Science and Technology, p127 edited by B. V. R. Chowdari et al. (1998).
14. D. K. Sahu, **S.K. Pandey** and A.K. Kembhavi, .Properties of Dust extinction in NGC 2076: 1999, Bulletin of ASI, 1999, Vol. 27, p271.
15. Padmakar and **S.K. Pandey**, New BVR Photometry of Six prominent RS CVn Binary stars: Astronomy and Astrophysics, Suppl. Series, 1999, Vol. 138, p203 .
16. Padmakar, K. P. Singh, S. A. Drake and **S. K. Pandey**, Optical, X-ray and Radio observations of HD 61396; a Probable new RS CVn type binary: MNRAS, 2000, Vol 314,p733..
17. Padmakar, S. Barway and **S. K. Pandey**, Study of Sky Conditions at Raipur and Calibration of Photometer-Telescope System: Bull. Astron. Soc., India, 2000, Vol 28, p437.
18. **S. K. Pandey**, D. K. Sahu, A. K. Kembhavi and P. J. McCarthy, Optical and near-IR imaging of dusty ellipticals : Bull. Astron. Soc. India, 2001, Vol. 29, p449.
19. M. K. Patil, **S. K. Pandey**, A. K. Kembhavi and Mahendra Singh, Dust in an extragalactic environment; the case of NGC 2907: Bull. Astron. Soc. India, 2001, Vol 29, P453.
20. S. Barway and **S K Pandey**, HD 52452: New BVRI Photometry : 2004, IBVS 5553,1 (astro-ph N0. 0408351).
21. S Barway, **S K Pandey** and P S Parihar, BVR photometry of a newly identified RS CVn binary star HD61396 :2004, New Astronomy, 10, 109 (astro-ph No.0408177).
22. S Barway, Y. D. Mayya, A K Kembhavi and **S. K. Pandey**, Multicolour surface photometry of Lenticulars I The Data: 2005, AJ, 129, 630 (astro-ph N0. 0411026).

23. Meech K. J. ...**S. K. Pandey** ... et al , Deep Impact: Observations from a worldwide Earth-Based Campaign: 2005, Science, 310, 265.
24. M. K. Patil, S. K. **Pandey**, D. K. Sahu, and A. K. Kembhavi, Properties of Dust in Early-type Galaxies: 2007, A&A 461, 103-113. .
25. Intrinsic shapes of very flat elliptical galaxies, D. K. Chakraborty; A. K. Diwakar; **S. K. Pandey**, 2011, MNRAS, 412, 585C.
26. Dust extinction and X-ray emission from the starburst galaxy NGC 1482, N. D. Vagshette; M. B. Pandge; **S. K. Pandey**.; M. K. Patil, 2012, NewA, 17, 524V
27. Evidence of two unique variability classes from IGR J17091-3624, Mayukh Pahari,; Sudip; Yadav, J. S. Bhattacharyya; **S. K. Pandey**, 2012, MNRAS, 422L, 87P.
28. Environment dependent spatial correspondence between the dust, ionized gas and hot gas in some early-type galaxies; N.D. Vagshette, **S. K. Pandey**, M K Patil; SRTMU's Research Journal of Science; 2012, 1(2), 1-13 (ISSN: 2277-8594)
29. Multiwavelength view of ISM in the merger remnant Fornax A galaxy; S. P. Deshmukh, B. T. Tate, N. D. Vagshette, S. K. Pandey, M K Patil; Research in Astronomy and Astrophysics, 13(2013), 885-898, astro-ph:[2012arXiv1207.4324D](https://arxiv.org/abs/2012arXiv1207.4324D).
30. Properties of unique hard X-ray dips observed from GRS 1915+105 and IGR J17091-3624 and their implications, Pahari, M. , Yadav, J.S., Rodriguez, J., Misra, R., Bhattacharyya, S., Pandey, S.K. . ApJ , 778 (2013), 46.
31. “ Interpretating the large amplitude X-ray variation of GRS1915+105 and IGR j17091-3624 as modulations of an accretion disc”, Pahari M, Misra R, Mukherjee, Yadav J S, Pandey S K, MNRAS 436(2013), 2334-2345.
32. Study of Dust and Ionized Gas in Early-type Galaxies; S. Kulkarni, D K Sahu, L Chaware, N K Chakradhari, **S K Pandey**, 2014, New Astronomy, 30, p51-63.
33. Isophotal shapes of early-type galaxies to very faint levels; Laxmikant chaware, Russell Cannon, Ajit Kembhavi, Ashish Mahabal, and S K Pandey 2014, ApJ, 787, 102.

- **Published in Conference proceedings (Abstract/full paper):**

1. **S.K.Pandey**, A.K.Kembhavi and Vijay Mohan, BVRI Imaging of the Disturbed Spiral Galaxy NGC 2701: Journal of Astrophysics and Astronomy, Suppl. Vol. 16, p 205 , 1994(Proceedings of the 6th Asian-Pacific Regional Meeting on Astronomy of the IAU held at IUCAA, Pune during August 16-20, 1993,eds. Kapahi et al.).
2. Neeharika Thakur, Devendra Sahu, **S.K.Pandey** and A.K.Kembhavi, Multicolor Investigations of Shells, Dust and other Features in Elliptical Galaxies: Journal of Astrophysics and Astronomy, Suppl. Vol. 16, p 205,1994 (Proceedings of the 6th Asian-Pacific Regional Meeting on Astronomy of the IAU held at IUCAA, Pune during August 16-20, 1993,eds. Kapahi et al.).
3. **S.K.Pandey**,A.K.Kembhavi and V.Mohan, Multicolor Surface Photometry of Spiral Galaxies: 1995, Bulletin of ASI, Vol. 23, p529,1995 (Proceedings of the XVI ASI Meeting held at IUCAA during Oct 25-28,1994, ed. V. K. Kapahi).
4. D.K.Sahu, D.K.Chakraborty, **S.K.Pandey**, A.K.Kembhavi and V.Mohan, Isophotal Shape Analysis of Early-type galaxies: Bulletin of ASI, Vol. 23, p530,1995 (Proceedings of the XVI ASI Meeting held at IUCAA during Oct 25-28,1994, ed. V. K. Kapahi).
5. **S.K. Pandey**, Isophotal distortions and Faint Features in Elliptical Galaxies: 1998, New Vision Vol. 1, p13-21(invited article published by SRTM University, Nanded).

6. M K Patil, D K Sahu, **S K Pandey**, A K Kembhavi, U C Joshi, K S Baliyan and M Singh, Dust Properties in early-type Galaxies : 2002,BASI, Vol. 30, p759.
7. M. K. Patil, **S. K. Pandey**, D. K. Sahu, Ajit Kembhavi : “ Multi-wavelength Study of Dust Properties in Early-type Galaxies:2004, ASP Conf. Series, Vol 309 (proceedings of the International Symp. On Astrophysics of Dust held at Colarado USA, may 26-30, 2003)
8. L. Chaware, S. Barway, **S. K. Pandey**, **A. K. Kembhavi**, D. K. Sahu, Dust properties of NGC 3801: 2005, BASI, 33, 401. (paper presented at the XXIII th meeting of ASI held at ARIES, Nainital during Feb 21-23, 2005).
9. S. Barway, **S. K. Pandey**, L. Chaware, Long-term spot activity variation in FK Comae Berenices: 2005, BASI, 33, 368. (paper presented at the XXIII th meeting of ASI held at ARIES, Nainital during Feb 21-23, 2005).
10. S. Barway, **S.K. Pandey**, P.S. Parihar and L. Chaware, Long-term Spot Activity Variations in Chromospherically Active Stars, poster paper presented at IAU XXVIth GA JD-08- Solar and Stellar Activity Cycles, Prague, Czech Republic, August 14-25, 2006.
11. S. K. Pandey :Teaching and Research in Astronomy using Small Aperture Optical Telescope: , invited ORAL presentation (SPS5-36) at IAU XXVIth GA, SPS5- Astronomy for the Developing Countries, Prague, Czech Republic, August 14-25, 2006. IAU provided special grant to cover travel, registration fee and local hospitality for the talk.
12. Laxmikant Chaware, Russell D. Cannon, Ajit Kembhavi, Ashish Mahabal & **S K Pandey**: Redshift of galaxies in Palomar Large Format Camera (LFC) Fields: preliminary results, paper presented at the XXIVth meeting of ASI held at Osmania Univ., Hyderabad during Feb. 7-9, 2007 .
13. M. K. Patil, **S. K. Pandey**, Ajit Kembhavi ,D. K. Sahu,: Multiband Analysis of a prominent dust lane galaxy NGC4370, paper presented at the XXIVth meeting of ASI held at Osmania Univ., Hyderabad during Feb. 7-9, 2007.
14. Laxmikant Chaware, Russell D. Cannon, Ajit Kembhavi, Ashish Mahabal & **S K Pandey**: Isophotal shapes of early-type Galaxies with very faint isophotal levels, paper presented at the XXVth meeting of ASI held at IIA, Bangalore, during Feb. 19-21, 2009 (presented by Chaware)
15. S Kulkarni, L. Chaware, N K Chakradhari and **S K Pandey** : Dust and ionized gas in early-type galaxies, paper presented at the XXVth meeting of ASI held at IIA, Bangalore during Feb. 19-21, 2009 (presented by Kulkarni).
16. Laxmikant Chaware, Ajit K. Kembhavi, Russell Cannon, A. Mahabal, **S.K. Pandey** : Isophotal shapes of early-type galaxies to very faint isophotal levels, Poster presentation at ASI meeting Feb. 18-20, 2009 IIA, Bangalore(presented by Chaware).
17. Samridhi Kulkarni, Laxmikant Chaware, D. K. Sahu, N. K. Chakradhari, **S. K. Pandey** : Study of Dust and Ionized gas in Early type galaxies, poster paper presentation , XXVth ASI- Feb. 19-21,2009 held at IIA, Bangalore(presented by Kulkarni).
18. Samridhi Kulkarni, Laxmikant Chaware, D. K. Sahu, N. K. Chakradhari, **S. K. Pandey** : Multiband Photometric Study of Dusty Early type Galaxies" poster paper, 16th National Space Science Symposium, 2010, held during 24-27 February 2010, at Saurashtra University, Rajkot. (prented by Kulkarni and the poster won third prize).
19. Samridhi Kulkarni, Laxmikant Chaware, D. K. Sahu, N. K. Chakradhari, **S. K. Pandey** : Study of Dust properties in Early type Galaxies, poster presentation, “Wittfest : Origins and evolution of Dust”, held at University of Toledo, Ohio, USA, during 10-12 October 2010(prented by Kulkarni).
20. Samridhi Kulkarni, Laxmikant Chaware, D. K. Sahu, N. K. Chakradhari, **S. K. Pandey** : Multiwavelength investigation of dusty E/SO galaxies, poster presentation at the ASI-2011, held at Pt.R. S. University, Raipur, during February 23-25, 2011 (presented by Kulkarni; won the best poster prize).

21. Laxmikant Chaware, Ajit K. Kembhavi, Russell Cannon, Ashish Mahabal, **S. K. Pandey** : poster presented in "JSPS-DST Seminar and 8th CPS International School" "Recent and Future Advances in Observational Astronomy" held at Kobe, Japan during September 26-30, 2011 (presented by Chaware).
22. "Multiphase ISM in starburst galaxy NGC 1482" in 29th meeting of the Astronomical Society of India, Raipur, during February 23-25, 2011. [2011ASInC...3..149V](#)
23. "Investigation of X-ray Cavities in the Cooling-Flow Cluster Galaxies" in 29th meeting of the Astronomical Society of India, Raipur, during February 23-25, 2011. [2011ASInC...3R.158P](#)
Appeared in Astro-ph :
24. "Multiband imaging observations of a prominent dust lane galaxy NGC 4370"; Patil, M. K.; Pandey, S.K.; Kembhavi, Ajit; Sahu, D.K. (**2009arXiv0901.1747P**)
25. "Morphology and spectroscopy of hot gas in some early type galaxies; N.D. Vagshette, M.K.Patil, S.K. Pandey, & Ajit Kembhavi"; 2009 (astro-ph:0903.3123v1)

➤ **Participation in conferences/Schools/Workshops:**

Participated in ~40 national/international conferences/schools/workshops mostly for paper presentation or for invited talks. Some important ones include:

- **XX general assembly of IAU: Aug 2-11, 1988, Baltimore, USA.**
- **IAU symposium No 138 on Solar Photosphere: May 15-20, 1989, Kiev((Paper presentation :01)**
- Indo-US Workshop on AGN and Quasars: Dec 6-18, 1993, IUCAA, Pune.
- XVI Annual Meeting of ASI: Oct 25-28, 1994, IUCAA, Pune(paper presentation :02).
- INDO-US Workshop on Elliptical Galaxies: Structure and Dynamics: November 23-December 7, 1995, IUCAA, Pune(one lecture).
- XVII Annual Meeting of ASI: January 17-20, 1996, University of Guwahati,Guwahati(paper presentation :03).
- **Les Houches School on Starbursts: triggers, nature and evolution: Sept 17- 27, 1996 Les Houches, France.**
- IUCAA Decennial year meeting: Jan. 7-11, 1999, IUCAA, Pune.Gave a lecture on Dust in galaxies(01)
- UPSO-IUCAA workshop on Observational Programmes with 2m class Telescope: Oct. 25-28, 1999,UPSO, Nainital. Gave two lectures on Galaxy Photometry.
- XX meeting of Astronomical Society of India : Nov. 15-18, 2000, Gorakhpur. My involvement in this meeting included(i) as a member of Scientific Organizing Committee(SOC), took initiative to have a session on teaching of Astronomy in Indian Universities and use of small telescopes, (ii) delivering an invited talk on Teaching of Astronomy at Ravishankar University, Raipur, and(iii)paper presentation entitled Optical and near-IR imaging of dusty ellipticals in the poster session}(02).
- XXI meeting of Astronomical society of India: Feb. 5-8, 2002, IUCAA, Pune. Following papers were presented: (I) Dust properties in Early-type Galaxies, M K Patil, D K Sahu S K Pandey et al., and (II) Long-term Photometric variation in Chromospherically active stars : Padmakar, S K Pandey and S Barway.(02)
- Workshop on Cosmology and High Redshift Universe, Feb. 8-12, 2003, IUCAA, Pune(sponsored by IUCAA, Pune and IFA, Hawaii)
- Workshop on Structure and Dynamic of galaxies, Jan 19-23, 2004, Osmania Univ, Hyderabad(gave three lectures)

- **International Virtual Observatory Alliance(IVOA): Interoperability Meeting and Small Projects Meeting, Sept. 27- Oct. 1, 2004, IUCAA, Pune.**
- A Symposium on Infrared and Optical Astronomy at Mt. Abu Observatory, December 15-17, 2004, PRL, Ahmedabad (gave one invited talk).
- Workshop on Science with Himalayan Chandra Telescope(HCT), IIA, Bangalore, Jan 21-22, 2006(invited for presentation on our collaborative work on Properties of Dust in early-type Galaxies).
- **XXVI General Assembly of IAU, Prague, Czech Republic August 14-25, 2006; Following papers were presented :**
 1. Teaching and Research in Astronomy using Small Aperture Optical Telescope: S. K. Pandey, **ORAL presentation (SPS5-36) at IAU XXVIth GA, SPS5- Astronomy from Developing Countries, Prague, Czech Republic, August 14-25, 2006. IAU provided special grant to cover travel, registration fee and local hospitality for the talk.**
 2. Long-term Spot Activity Variations in Chromospherically Active Stars: poster paper(JD08-44), Barway S. Pandey S. K., Parihar P. S., **at IAU XXVIth GA JD-08- Solar and Stellar Activity Cycles, Prague, Czech Republic, August 14-25, 2006.**
- **10th APRIM of IAU, Kunming, China, August 1-6, 2008; invited talk on The use of telescope to supplement class room teaching in Astronomy, travel grant etc were provided by the IAU and the LOC.**
- **Young Scientist Meet (CGCOST), Bastar University, Jagdalpur, Feb.28-March 01, 2011, for an invited, evaluation and chairing the valedictory function.**
- **Young Scientist Meet (CGCOST), Sarguja University, Ambikapur, Feb.28-March 01, 2012, for invited talk and chairing one session.**
- **Associates' Fest held at IUCAA, June 25-29, 2012; gave a talk on Teaching & Research in A&A at PRSU, Raipur**
- **AIU 1st Central Zone VC's Conference held at GGD Central Univ Bilaspur, Oct 26-27, 2012**
- **Integrated Approach to herbal technology IAHT-2013, at Chennai, Jan 4-5, 2013 Chaired one session.**

Other matters of relevance

- Administrative experience
- 1. As Professor and head, School of Physical Sciences of the SRTMU, Nanded during 1996-1998 actively involved in setting up of the new department with state-of-the-art lab facilities for teaching and research. Computing and image processing facilities(Digital work stations etc) PCS with image processing and other software, peripheral devices and accessories were installed during the period. Observing facilities with 8" telescopes, SSP-3 photometer were procured for carrying out observational exercises as a part of PG course.
During the tenure at SRTMU, as the coordinator of the Campus Schools in the University I was engaged in the overall development of the University.
Also served in several statutory committees including purchase committee for procurement of computers in the university. Likewise, involved in preparation and presentation/discussion with UGC team for the IXth plan proposal.
- 2. Before joining the position of Vice-Chancellor, as the Professor & head of school of studies in Physics I was engaged in upgradation of course content of M Sc & M Phil courses, laboratory facilities as well as of the research facilities in the department.

High lights of some important academic and administrative responsibilities performed as the Vice-Chancellor of Pt Ravishankar Shukla University, Raipur since March 02, 2009 till date

- Successful conduct of annual examinations : 2009, 2010, 2011, 2012 as well as other semester examinations, medical, dental, nursing, physiotherapy, ayurvedic and law conducted as per schedule, and results announced more or less within scheduled time frame
- Foundation day celebrations May 01, 2009, 2010, 2011,& 2012; teachers and employees retired were felicitated, efficient employees were awarded based on their performance
- Annual celebrations such as, Pt Ravishankar Shukla Jayanti(August 02), independence day(15th August), Pt Sunder Lal Sharma Jayanti(Dec 21), Republic day(Jan 26) with joy every year during 2009-2013.
- From the very beginning Students' are allowed to visit VC through the office DSW in a bid to sort out their long standing problems on matters related to degree, mark sheet, migration, R/V etc. This has made a significant improvement in the minds of the students as far as their complaints on the day-to-day functioning of the University.
- Employees, officers as well as College/university teachers have easy accessibility to the VC in sorting out their problems.
- Six pay scale for University employees and UGC pay scales of teachers were implemented soon after the state Govt declared these scales for Govt employees.
- Initiated the practise of review meeting various departments as a way of monitoring various developmental activities, examination, academic, finance as well as of general administration.
- Overdue payment of sixth pay arrears of employees and teachers was made during the term.
- Enhancement of BMG from the state Govt from 7.5 crore per annum to 24crore; Govt has been generous in allocating additional establishment grant in the budget, but for the first the University has managed to get its BMG enhanced nearly after a decade or so.
- A number civil works (new construction and maintenance work) as per University's requirement with the grant from State Govt as well as from UGC for the XI plan was given to state PWD unit under deposit work; though late, but progress of majority of these construction and renovation works is visible in the campus now.
- State Govt. was persuaded for approval of special grant of Rs 7 crore for acquisition of additional land to the university; this was indeed included in the budget for the year 10-11, and thus University could have additional land to the tune of 30 acres.
- Demarcation of University's land property was carried out through state govt district level officers after long persuasion; this will make the process of erecting boundary wall of the campus faster.
- Following UGC regulations-2009 for M Phil and Ph D, respective ordinances were modified as per procedure laid down and successfully implemented thereafter in the University
- Pending promotions of teaching faculty as per old rules UGC were carried out in the year 2010
- Minimum qualifications of teaching faculty as per UGC norms-2010 were adopted by modifying respective ordinances and made in force for the fresh recruitment as well as for promotion under CAS

- Following norms of Bar Council of India, semester system for law education (LLB, B A LL B, LLM), admission procedure etc were implemented after suitably modifying the respective ordinances
- For the first time in the University, system of rotation for the appointment of Heads of University Department was successfully implemented
- Convocations were organized regularly in the University : Jan 17, 2010 with Prof Govind Swarup, FRS as the Chief guest, Feb 02, 2011 with Dr K Radhakrishnan, Chairman, ISRO as the Chief Guest, Jan. 14, 2012 with Dr T Ramasami, Secretary, Dept of Science & technology, Govt of India as the Chief guest, and Feb. 23, 2013 with Prof Ved Prakash, Chairman, UGC as the Chief Guest
- Annual reports as well as requisition for re-accreditation sent to NAAC. NAAC team visited the University during Sept, 2010 and University was accredited with Grad B(CGPA 2.62) with effect from Jan 8, 2011 for a period of five years
- NAAC report was made public on our website after tabling before the Executive Council, and a Vision Committee was constituted to recommend short term and long term plan for the improvement of academic, administrative functioning etc; these recommendations are in the process of implementation in a phased manner
- Individual faculty members, Department as a whole were encouraged and promoted to submit proposals to various funding agencies; this resulted in earning several projects by several faculty members and some of the University departments to beg DIST-FIST and SAP grants. These turn have led to significant improvements in research facilities in the University as whole (data?)
- Faculty members were encouraged to participate and present papers in national as well as international conferences(data?)
- University Departments were encouraged to organize national/international conferences/seminars; a large number of national as well as international conferences were organized with liberal funding from the University from its unassigned grant besides support from other funding agencies.(data ?)
- Introduction of award of travel grants to deserving research scholars to attend international symposia/conferences abroad was considered, by NAAC, as one of the best innovative practices of PRSU, Raipur. A budgetary allocation of Rs 2.00 lacs with support of Rs 40, 000/- (max) was made for the first time during the year 2009-10.
- **Successful in bringing in a DST-Funded National Center for Natural Resources (NCNR) in the University Campus and making it functional on the campus. Total budget out lay is Rs 9.05 crore for a period of three years, to begin with. The facility is unique in the country as it is the only center that deals with medicinal plants and autoimmune disorders in sync.**
- **Initiated having negotiations with other funding agencies to open national level research centers in Chhattisgarh. One such initiative with the CSIR is in the pipeline.**
- DST's dream project INSPIRE was adopted in the University campus, and so far seven INSPIRE camps have been organized in our campus with an objective to attract talented youth of Chhattisgarh to the main stream of basic sciences; this in turn will help the state in having a sustained propagation the culture of teaching and quality research among the youth and contribute the strengthening the higher education in the state as well as in generating skilled man power who would be available as teachers in schools/colleges/universities in years to come.
- University-Industry partnership council was constituted and resulted in the first positive response in that one industrialist has agreed to donate a state-of-the-art girls' hostel on the campus. The council is in the process of introducing add on courses and skill development seeking help/advise from the experts from industries so that our graduates become employable.
- Process contractual appointment of teaching faculty was adopted on yearly basis until the process of direct recruitment process is completed in order that teaching does not suffer. Likewise, in department where adequate faculty position are not available guest faculty members were

appointed. During the tenure the honorarium was enhanced from Rs 250/ per lecture to Rs 300/- per lecture up to a maximum of Rs 15,000/ in a month.

- Recruitments of subordinate staff and faculty was initiated about a year and half back. So far recruitment of teachers and promotion of teachers under CAS have been completed. Recruitment of class III/IV is currently going on; some appointments have already been made.
- Issue of pension to University employees/teachers has been raised at several forums including the Coordination committee in order to ensure that order pertaining to pay/DA/pension of University employees/teachers be issued along with similar official orders for Govt employees.

Wish list for next five years

Infrastructure development

- Modern Boys' and Girls' Hostels, University Guest House, Convention centre cum international guest house
- Wi-fi Campus
- Connectivity to affiliated Colleges; paperless communication and sharing of library resources, video conferencing of lectures
- Enhancement of Sport facilities; renovation of Kota Stadium with state-of-the-art facilities
- Completion of new construction works initiated, and maintenance of schools building, hostels and staff quarters etc

Academic reforms

- Implementation of CBCS in PG courses in the Campus Schools as well as in affiliated college
- Phase wise introduction of semester system as well as CBCS in UG courses too
- Centralized Admission through Entrance examination and Counselling at the University level
- New courses during 12th five-year plan e.g. Space and atmospheric sciences, new specialization in Mathematics, management, life sciences, Physics
- Inclusion of add on courses as well as other job orient short term courses with the help of experts from industries to create skilled man power; experts from industries will be inducted into board of studies as invitees for the purpose
- Reaching out schools, specially located in rural areas ; each university teaching department is expected at least a school and faculty will pay regular visits to build a stronger ties with schools
- Establish some innovative centres to carry out need based short term (one year max) projects; this would involve participation of faculty members from affiliated colleges from different disciplines, PG students and one expert from within or outside University campus
- Establish some Centres of Research in the University campus

Examination reforms

- Automation of all the sections in an integrated manner right from admission until award of degree; online admission, online fee payments etc

- Streamline the process of reevaluation; procedure needs to be adopted for providing photocopy of answers sheets to the students on request, followed by reevaluation on demand, if needed
- Change in format of question papers; questions should be a mixture of objective, very short, short, long and very long answer questions in appropriate proportions
- To limit the no of pages for answer sheets; only one answer book with no provision of supplementary copies
- Size of degree certificate needs change; from current size to normal A4 size good quality paper with all security precautions and would carry scanned signature of VC for UG degrees and diploma. Only PG and above degrees are to be signed by VC

Why does the applicant consider himself suitable for the position of Vice-Chancellor?

The applicant is the incumbent VC of Pt. Ravishankar Shukla University, Raipur, since March 2009 and possesses vast administrative experience in all spheres of activities of the University.

Created a fearless milieu for teaching and research

The applicant as the head of the PRSU ensured a fear-free campus that has been congenial for undertaking teaching and research activities. He was also the person who conducted long overdue promotion and appointment of both teaching and non-teaching staff creating a joyous atmosphere on the campus.

Administrative Reform

He was the first bold VC who instituted system of rotation of headship in the University.

Research and Academic Activity

The applicant is instrumental in bringing in IUCAA Resource Centre on the campus of PRSU, Raipur. The center offers a comprehensive environment for students and teachers of Universities to undertake cutting edge research in Astronomy and Astrophysics. He has played a pivotal role in the popularization of astronomy among school children of Chhattisgarh. During his regime as the VC ordinances related to MPhil and PhD were revamped. During this period entrance test was introduced for the admission in to the research degree programs. Under his leadership the process of adoption of the Choice- Based Credit System (CBCS) is in the pipeline. It has been envisaged to introduce the CBCS from the next academic session preliminarily on the campus first and subsequently extending it to the affiliated colleges. During his regime number of International and National Symposia/ Conferences were organized, convocations were held regularly and religiously.

Hosted INSPIRE Program

Under his leadership 7 INSPIRE camps were organized in the State to attract young talents to the realm of basic sciences.

Creation of UIPC

University-Industry partnership council was formed under his leadership and resulted in the first positive response in that one industrialist has agreed to donate a state-of-the-art girls' hostel on the campus.

Administrative Experience

He was the driving force behind the implementation of Semester System in all PG Courses of the Affiliated Colleges of PRSU. He was also the first to introduce a system to objectively assess the performance of all affiliated colleges with mechanisms for appreciation for those who are above the threshold and promote others, who lagged behind, for qualitative improvement. It is at the behest of his leadership the PRSU was awarded with 'B' grade by the NAAC with a CGPA of 2.62.

Infrastructural Development

During his regime University Auditorium, Central Library, Life Science, Arts Block, Boys' Hostels and Girls' Hostels buildings were renovated completely. The road network of the university campus was expanded and upgraded. The construction of ASC building, Observatory building, Meeting hall are under process.

Introduced Innovative Practices

Introduction of award of travel grants to deserving research scholars to attend international symposia/conferences abroad was considered, by NAAC, as one of the best innovative practices of PRSU, Raipur. He constituted a vision committee that delve into various issues of the PRSU and helped in constructing Vision/ Mission Statements and also for evolving the Road Map for the University.

Brought laurels for the University and the Region

The applicant was the main architect in bringing in DST-Funded National Center for Natural Resources (NCNR) and making it functional on the campus. The facility is unique in the country as it is the only center that deals with medicinal plants and autoimmune disorders in sync. He has been constantly vigilant in having negotiations with other funding agencies to open national level research centers in Chhattisgarh. One such initiative with the CSIR is in the pipeline.

Visualized dreams for the University

The applicant – armed with a PhD degree from Tata Institute of Fundamental Research (TIFR), Mumbai is a distinguished scientist in the field of Astrophysics and Astronomy. He is an alumnus of the University who has cherished dreams for its growth and development. He wishes to crown the University with the distinction of having "A" grade from the NAAC. He will put his best efforts to ensure that the PRSU becomes one of the distinguished centers of higher learning and research in the country.