

RESUME

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A Statement of Services Rendered

(Responsibilities and Major Contributions & Achievements)



Prof. Avinash C. Sharma

Date of Joining at GGSIPU: December 30, 1999

**University School of Basic & Applied Sciences
GSS Indraprastha University, Sector 16C, Dwarka, New Delhi 110078**

KEY RESPONSIBILITIES RENDERED AND CONTRIBUTIONS MADE

(Summary)

- **As one of the early employees of the University after its inception in December 1998, participated in variety of foundational activities of the University.**
- **As the Dean of the USBAS played central role in introducing three Post Graduate level teaching programmes in the upcoming areas of technologies and research like Engineering Physics, Nano Technology, Biodiversity & Conservation. It was for the first time that teaching courses were introduced in the USBAS.**
- **As the Dean and Professor of USBAS, Chaired the duly constituted Committees for development of course structure, scheme of examination and course content of the three newly introduced Post Graduate level programmes in USBAS.**
- **As Director- Academic Affairs chaired a number of committees for restructuring, upgrading, and initiating new teaching programs in various USSs.**
- **Held positions of Chairman-Sports Committee GGSIPU (2002-2005), Dean USBAS (2005-2008), Director-Academic Affairs (2009-2011), Chairman, University Information Resource Centre (UIRC), GGSIPU; and currently holds the responsibility of Director, Co-ordination.**
- **Had been Member of various Statutory Bodies of GGSIPU and other Universities of the Country. , and also Board of Studies in many Universities**
- **Has delivered a number of keynote addresses/lead talks/invited talks in national/international symposia/conferences held in India & abroad.**
- **Has been invited as Expert/Committee Member in the Selection Committees for Professors, Associate Professors and Assistant Professors in a number of Universities in the Country.**
- **Has been nominated on the Boards and Academic Statuary bodies of a number of national institutions and universities.**

- **Has been member of Reviewing Committees of a number of national and International Journals.**
- **Contributed in the early stage of conceptualisation and development of the Concept Document for Delhi Sports University under the Chairmanship of Prof. A.K. Tyagi, the Vice Chancellor, GGS IPU.**
- **Conceptualized & Developed the Draft Document for establishment of '*Nanotechnology Industrial Hub*' and an '*Interstate Research Complex*'; both of which are under the active consideration of the Ministry of Commerce, Government of India and Government of Haryana.**

PERSONAL AND EDUCATIONAL INFORMATION

1. PERSONAL INFORMATION

- Date of Birth : 08-04-1956
- Present designation : Professor of Physics & Director, Coordination,
- Email id / Mobile : acsharma@ipu.ac.in : 09810693233

2. EDUCATIONAL QUALIFICATIONS

Sl. No	Examination	Year	Division	Name of University/ Board
1.	Matriculation	1972	I	CBSE (Chandigarh)
2.	B.Sc. (HS) Major –Physics	1977	II	Panjab University, Chandigarh
3.	M.Sc. (Physics) M. Sc. (Honours School specialization: Particle Physics, Electronics	1978	I	Department of Physics Panjab University, Chandigarh
4.	Ph. D. (Faculty of Science) Title of the Ph.D. thesis: “ <i>Low Energy Hadronic Matrix Elements in a Model Simulating Harmonic and Bag Dynamics</i> ”.	1983	-	Department of Physics Panjab University, Chandigarh

3. PROFESSIONAL EXPERIENCE

:34 years 10 months

- Teaching (UG) : 9 years;
 - Teaching (PG) : 25 + yrs.
 - Software development : 2 years
 - Research : Since 1980
 - **Record of the Regular Employment*** : **Since 1983**
- The details are as follows :

S.No.	Organization	Period	Position /Designation
1.	GGS IP University . New Delhi	2002 – onward	Professor of Physics
		1999 – 2002	Reader in Physics
2.	Kurukshetra University.	1994 – 1999	Reader in Physics
		1986 – 1994	Lecturer & Sr. Lecturer
3.	Panjab University. Chandigarh	1984 – 1986	Programmer/System Analyst
4.	DAV College Chandigarh	1983 – 1984	Lecturer in physics

*Throughout the work profile has been teaching and research.

4. JOURNAL PUBLICATIONS DURING 2012-2017: 11 (in refereed Journals)

Total Since 1981 : 34 (All in international refereed journals)

BRIEF DETAILS OF SIGNIFICANT CONTRIBUTIONS at IPU

I was one of the very early members to join the small core team of the founder Vice Chancellor in the early years of its inception in 1999 and since then share the responsibility and pride of the success story of the IPU. In the early years of development of GGS IPU, I played critical role in the envisioning, planning, and implementation of various academic & institutional activities of the University like;

- Teacher's evaluation by the students
- Framing norms & rules for the *Sponsored Research Projects & Consultancy*,
- Establishment of Research Labs and commencement of Ph.D. programs, PG Level teaching programmes in USBAS
- The affiliation, assessment & accreditation of the self financing institutions under the GGS IPU. I have been the convener of the Committee which framed the *norms & standards* for affiliating the self financing institutions with the University in 2005-2006.
- Since joining the University, I have rendered my responsibilities in various capacities like,
 - Reader in USBAS -
 - Professor of Physics in USBAS -
 - Dean, USBAS -
 - Director (Academic Affairs) –
 - Director (Co-ordination) –
 - Member of Academic Council –
 - Member of Board of Management –
 - Member of the University Court –

A. INSTITUTIONAL RESPONSIBILITIES

1. Dean: University School of Basic & Applied Sciences : 10-06-2005 - 12-8-2008

Raised the School from 'support school' to a fullfledged School of the University.

Some of the achievements has been as follows:

- Designed and initiated three unique post graduate teaching programs
 - M.Tech. Engineering Physics, 2006
 - M.Tech. NanoScience & Technology 2007
 - M.Sc. (Biodiversity & Conservation) 2008
- Facilitated designing and framed Scheme of Examinations Syllbai, and establishing newer laboratories.
- Faculty strength trebled
- Extramural funding of over 7 crore
- New instruments were procured so as to establish new advanced physics laboratory.
- Upgraded TRC with newer higher end facilities.
- Worked out, signed and implemented MOUs with
 - IOP, Taipei, Taiwan
 - Clemson University, USA

Several students and faculty members have benefitted from the MOU.

2. Director: Academic Affairs 1st April 2009- 30 Dec. 2011

- Resopnsible for (i) Aacademic Programs of the university (ii) Annual report of the university.
- Standardized all ‘Scheme of Examinations & Syllbai’ of programs of the University& brought these in print form.

3. Chairman - University Information Resource Centre (Library) Committee

(1-4- 2009 to 0-6-2011) :

- Implemented panel based process of procurement of books.
- Implemented subscription of Online research journals.
- Initiated Digitalization of library
- 1st time usage analysis were implemented.

4. Chairman, Sports Committee (2004 - 2006) :

- Initiated first tournament in table tennis;
- designed zonal structure for sports activities of affiliating institutes.

5. Member Statuary Bodies of the University

- | | |
|---|------------|
| ▪ The Court | 2007-2008 |
| ▪ Board of Management | 2008-2011 |
| ▪ Academic Council (as Dean USBAS) | 2008-2011 |
| ▪ Academic Council (as Director Academic Affairs) | 2009-2011 |
| ▪ Internal Quality Assuarence Cell | 2013-2014 |
| ▪ Academic Council | Since 2005 |

6. School (USBAS) Level Statutory Bodies

- | | |
|---------------------------------------|--------------|
| ▪ Chairman Board of Studies USBAS | 2005-2008 |
| ▪ Chairman School Research Committee: | 2005-2008 |
| ▪ Member Board of Studies (USBAS) | 2000 onwards |
| ▪ Member School Research Committee: | 2000 onwards |

7. Director (Coordination) Since October 2014

- Co-ordinator of GIAN Program of MHRD
- Semesterwise space allocation for class teaching of all the Schools
- Steps towards Outcome Based Initiatives
- Initiate more platforms for academic interactions; like School-wise Annual Lecture Series, Research Forums e.g. BARS

B. OTHER ACADEMIC AND PROFESSIONAL ACTIVITIES (BEYOND IPU)

- 1. Country Talks, Invited Lead Talks, Chief Guest, during many symposia, workshops, seminars and other academic forums:** Delivered invited talks during many international, national symposia/workshops/seminar etc. held in India and abroad in the area of

- Electroweak interactions of hadrons
- New Q-Q/bar interaction potentials
- c- & b- quark phenomenology
- Relic Neutrinos
- Quantum Computation
- Grid Computing
- Computational physics
- Monte carlo basics
- Nanotechnology in India: Role of Universities (FICCI)
- Engineering Physics: Interfacing basic sciences and engineering disciplines
- Role of basics sciences in engineering education
- Career options in physics discipline

2. Invited talks in International Forums

Delivered invited talks at

- Williamsburgs, USA 1994
- Institute of Experimental Physics, Warsaw, Poland 1996
- Nihon University, Tokyo, Japan 1997
- Pittsburg State University, Pittsburg, USA 2002
- Institute of High Energy Physics, Beijing, China 2004
- Institute of Physics, Teipai, Taiwan 2007
- University of Amsterdam Amsterdam, Holland 2006
- JINR, Dubna, (Moscow), Russia 2006
- Clemson University, Clemson, USA 2008
- AITNER, Athens, Greece 2015
- Columbia University, Ohio, USA 2017

3. Expert Member in Selection Committees (Professor, Associate Professor, Assistant Professor

- Panjab University, Chandigarh
- Aligarh Muslim University, Aligarh
- University of Rajasthan, Jaipur
- Delhi University,
- IG Delh Technical University for Women (IGDTUW), New Delhi
- Delhi Technical University (DTU), New Delhi
- MS University, Vadodra
- MD University, Rohtak
- DB CR University of Science & Technology, Murthal
- GJ University of Science & Technology, Hisar
- CBL University, Bhiwani
- Banasthali Vidhyapeeth, Banasthali.
- ... large number of private universities, like , Amity, KR Mangalam, etc.

4. Expert Member in Departmental Promotion Committees and Foreign Fellowships

- Ministry of Science & Technology, GOI
- Ministry of Human Resource Development, GOI.

- Ministry of Environment, GOI
5. On panel of **Referee and Reviewer** of several international research journals;
- Physical Review D
 - Pramana
 - Indian Journal of Pure & Applied Physics
 - ... many more
6. **Evaluation of Ph.D. Thesis of various Universities and IITs (over 20 in number)**
7. **Member Organising Committee – Many International and National Symposia/Workshops/Seminars**
8. **Membership (Life Member) Professional Societies**
- Indian Association of Physics Teachers
 - Indian Physics Association
9. **Honorary Director on the ‘Board of Directors’**
- Multywave Technologies LLC, Texas USA
 - Appins Technologies Pvt.Ltd. , Bangalore
 - Techservices LLC, California, USA
 - Acuwin Solutions, Pvt. Ltd., Hyderabad.
10. **Member Statuary Bodies of other Universities**
- Member *PG Board of Studies*: Panjabi University, Patiala (2004-2006)
 - Member *Board of Studies in Applied Sciences*, Kurukshetra University (2004-2006)
 - Member *UG Board of Studies*: MD University, Rohtak (2006-2008), (2010-2012)
 - Member **Research Board** Kanpur University, Kanpur (2006-2008)
 - Member UG Board of Studies in Physics, DBCR Univ. of Sc & Tech, Murthal
 - Member, **Academic Council**, Teerthankar Mahaveer University, Moradabad (2009-2012; 13-16).
 - External Expert Member, *Department Research Committee*, Physics department, MD University, Rohtak (2010-2013).
 - Member, **Academic Council**, MS University, Baroda (2012-13,14).
 - Member *Board of Studies*, Faculty of Engg & Tech., IG Delhi Technical U. for Women, New Delhi (2014-16).
 - **Chairman**, *Research Admission Committee*, IGWDTU, New Delhi (2015).
 - **Chairman**, *Department Research Committee in Basic & Applied Sciences*, IGDWTU, New Delhi (2015-17).
 - Member PG Board of Studies in Physics, CBL University, Bhiwani (2017-2019)
 - Subject expert to Selections Committees of several universities, e.g. MDU, DTU, MSU, NIFTEM, UoR, IGDTUW, TMU,etc. and NITs,

11. Nominee of the Government/ National bodies

- *External Technical Expert*, (Nominee of GNCTD, Delhi), Forensic Science Laboratory (FSL) (2003-2006), (2006-2009), (2009-2010) ;
- **Advisor**, Nanotechnology Program, Panjab University, Chandigarh (2009-11)
- *External Expert Member*, ‘Center of Advanced Study’ Program of UGC, Physics Department, Panjabi U. Patiala (2011-2016)
- *External Expert Member*, ‘Center of Advanced Study’ Program of UGC, Physics Department, Burdwan U. Burdwan (2011-2016).
- UGC Nominee, Aligarh Muslim University, Aligarh (2015-2016)
- **Chancellor’ (Governor) Nominee** to promotions and selection committees of DBCR University of Science & Technology, Murthal, Haryana (2017-2019)

C. RESEARCH ACTIVITIES

I. Major Research Projects

1. Scientific Research project

As Principal Investigator

- a) ‘*A study of Electroweak properties of Hadrons*’, UGC, N. Delhi, 1993-96,07, Approx. INR 3.0 Lacs.
- b) ‘*Quark-Antiquark potentials and heavy quark (antiquark) bound states*’ DST, N. Delhi, 2000-2004 Approx. INR 6.5 Lacs
- c) ‘*Properties and decays of Charmed and b-Flavored Hadrons*’, CSIR, N. Delhi, 2005-2008, Approx. INR 5.0 Lacs.
- d) ‘*Electroweak properties and decays of heavy Hadrons*’, DST, N. Delhi, 2008-2011, 2012 Approx. INR 10.0 Lacs
- e) ‘*Synthesis and Characterization of Nano-structured materials*’, BRNS, Department of Atomic Energy, Mumbai, 2011-2014, Approx. INR 30.0 Lacs.

As Co-Investigator

- f) ‘*Characterization of Silicon Sheets prepared by Capillary Action Shaping Technique (CAST) for Solar Cell Applications*’ Solar Energy Research Initiatives (SERI), DST N. Delhi (2013-14, 15) Approx. INR 20 Lacs.
- g) ‘*Integrated Disaster Management Plan using Geospatial Technology for NCT of Delhi*’, Submitted for financial assistance of ~ INR 55 Lacs to DST (India) under the BRICS Multinational Res & Development projects (2017).

2. Industrial Research Project

'Smart BioCard for Educational Institutions', R & D Project sponsored by Multywave LLC (USA) (2006-2007, 08)

3. As Dean USBAS

Secured approximately INR 6 Crore funding for M.Tech (Nano Science & Technology) under the Nano Mission of DST Govt. of India (2006 – 2011 - 2016).

II. Research Publications :

Sr No.	Published in peer reviewed National / International Journal	No of Research Paper	Impact Factor
1	Physical Review D	11	4.5
2.	Pramana	2	2.0
3.	Nuovo Cim Letters	1	-
4.	Indian J of Pure & Applied Physics	4	1.5
5.	Jol. of Physics G	2	4.2
6.	Advances in High Energy Physics	1	3.0
7.	Physics of Particle & Nuclei Lett.	1	2.5
8.	Int. J of Current Research	2	1.5
9.	Achieves of Applied Science Res.	1	1.0
10	Advances in Applied Sciences	1	1.0
11	Int. J. of Current Research	2	1.0
12	Int. arch J. of Current Research	1	1.0
13	Journal of Physics Procedia	3	1.5
14	International Journal of Low Radiation	1	1.0
15	Int. J. of Environmental and Ecological	1	1.0
	Total	34	

- Collaboration Reports : (2)
- Books : (2- in preparation)
 - i. *VISION & VISIONARY: Demystified* (2017-19); Penguin
 - ii. *E-Governance in Institutions of Higher learning*, (2018-) Dover
- Over 600-Citations in various National & International Research Journals and PhD.s works.

III. Research Awards & Fellows

- **Prize:** "Hari Om Ashram Research Endowment Prize" 1994-95
- **Fellow:** "ICSC World Laboratory Fellow", 1989-90, Geneva (Switzerland) and LNF-INFN, Frascati, (Rome), Italy.
- **Associate:** "Inter-Univ Center for Astronomy & Astrophysics:", 1992-95, Pune
- **Visiting Fellow** ; Nihon University, Tokyo (Japan), 1997
- **Senior Speaker:** 'Theoretical Physics Seminar Circuit (TPSC)' S.N. Bose National Centre for Basic Sciences, Kolkatta, 1996-98.

IV. Postdoctoral Mentoring

- Dr. Rohit Dhir, *DK Kothari Fellow* of UGC, New Delhi (2012-2014)
- Dr. Neelesh Sharma, *Woman Scientist Fellow*, DST, New Delhi (2013-14)

V. Research Collaborations

Established research collaborations with the following prestigious institutions

- Institute of Physics, Taipei Taiwan
- Nihon University, Tokyo, Japan
- Panjabi University, Patiala
- Clemson University, Clemson, USA
- InterUniversity Accelerator Centre (IUAC), New Delhi
- DRDO, New Delhi
- National Physical Laboratory, New Delhi
- University of Delhi, Delhi

VI. A Technical brief of the Major Research Impact

1980-1990

- My Ph.D. work concerned developing a new phenomenological model that simulated the Bag as well as harmonic oscillator dynamics, for the study of hadronic properties; the model had been successfully applied to mass spectra, weak non-leptonic decays, electroweak decays, electromagnetic properties, etc.
- A new hadron mass formulae based upon new sub-structure of quarks had been established with fair success.
- A new scheme (now referred to as) *Quark Diagram Analysis (QDS)* has been developed for the study of electroweak properties of heavy hyperons. In particular, the analysis of weak radiative decays (PRD, 38, 1443, 1988) & W-exchange dominance in $\Sigma^+ \rightarrow p\gamma$ (J PhysG12:1329, 1986) earned substantial attention & recognition for the authors among the researchers in the field. Further support from the new experimental data led to the several newer studies thereafter.

1991-2000

- Issues of the energy level inequalities in the quarkonium sector had been addressed to for the first time. In the light of the new experimental data on energy levels of charmonium and bottomonium, a **new exact string potential** for quark-antiquark interactions, had been derived that is now referred to as '*wrinkled potential*' in literature.
- An incompatibility had been established for the calculation of quarkonium masses and their leptonic decay widths within the prevalent constituent quark models.

2001-2012

- The *Quark Diagram Analysis (QDS)* technique was fine tuned in the light of new experimental data of b-quark hadronic decays; several predictions

had been made for the $B \rightarrow VV$ electroweak decays and Bc^+ spectroscopic data; many of these now stands experimentally confirmed.

- Major role in initiating research activities in USBAS; from appointment of faculty of high quality research profiles and potentials, their nurturing including facilitating establishing their research labs, etc. In particular nano technology based PV Lab, thermoelectric lab, nano-chemistry labs, have since matured to its present form. ‘*Technology Resource Center*’ (TRC) was also upgraded by addition of several state of art high –end instruments like, Zeitasizer, STM, XRD, etc.
- All the three innovative teaching programs have been abnitio designed with substantial inbuilt research flavour.
- Particular mentionable is establishment of research-quality state of art EFG crystal growth facilities fully indigenously assembled by faculty, MTECH students, Ph.D. scholars, by way of active industrial participation, well supported by financial assistance from IPU and Ministry of Science & Technology, Government of India.

2013-2018

- Effects of Flavor dependence has been shown in the weak decays of J/Ψ and Upsilon mesons.
- Topological analysis has been developed for the study of Bottom mesons decaying into two pseudoscalars; a number of predictions of partial decay widths of several decays channels have been made; several relations among different decays have been made. The predictions are likely to be tested experimentally at forthcoming LHC and b-factory data.
- Study of the radionuclides (like ^{22}Ra , ^{232}Th & ^{40}K), radon exhalation etc., is important for radiation risk assessment vis a-vis human being; therefore a measurements and thorough analysis of natural environment radiation levels to have the baseline for dose limit of public exposure. An exhaustive survey of samples collected from coal, fly ash, soil & cement from several critical sites spread over states of Delhi, West Bengal Uttar Pradesh, Rajasthan & Haryana has been carried out by using sophisticated techniques like *twin chamber dosimetry*, *Sealed Can Techniques*, etc.; the detailed analysis and the findings have been published in research journals of international repute and are being utilized by researchers world over.
- The Non leptonic decays of Charmless p-wave mesons emitting bottom Mesons has been reinvestigated in the light of new experiemnatl data. The factotrizaton hypothesis has been shown to work well in these decays (Phys.Rev.D 2018).

D. CURRICULLUM DESIGN & DEVELOPMENT

- As Dean chaired various committes conspsing of external experts & members from various fields, for developing Scheme of Exminations and the Syllabai for the New Programs of School of Basic & Applied Sciences , M.Tech. (Engineering Physics), M.Tech. (Nano science & Technology) and M.Sc. (Biodiversity & Conservation)

- As Professor of Physics developed & worked out curriculum & syllabi for the following new courses in the discipline of physics

S .No.	Prpgramme	Course Title	Year
1.	M.Sc. (Physics)	High energy Physics Computational Physics	1987
2.	M.Phil. (Physics)	Methods in Theoretical Physics	1988
3.	B.Tech. (all branches)	Foundational Courses	1999-2000
4.	M.Tech. (Engineering Physics)	Advanced Computational Physics	2006
5.	Ph.D.	Advanced High Energy Physics Research Methodology	2015 2017

- As Director- Academic Affairs chaired a number of committes for restructuring, updrading, and initiating new teaching programs in various USSs.

E. KEY COURSES TAUGHT IN PHYSICS AND ALLIED AREAS

- I have taught a variety of advanced level corses at M.Sc., M.Phil., M.Tech. levels. This includes teaching of topics like Advanced Quantum Physics& Field Theory, advanced electrodynamics, advenced statistical physics, Monte Carlo simulations,etc. Also I have taught foundational courses to B.Tech. students of streams of CSE, IT, BT, CT etc.

A comprehensive list of courses taught is given as Annexure-2

- **Dissertations** – The M. Phil (Physics) and M.Tech. (EP) Programmes envisage submission and evaluation of dissertation in the Final Semester. Over 15 students carried out their dissertations under my mentoring either in-house or in industry/govt. Organisations in the following application areas:
 - Cosmic Neutrinos Background (CNB)
 - Detector Designing in LAB View
 - Home automation
 - High efficiency thermoelectric materials
 - Designing of a prototype windmill for highway electrification.
 - Modeling quark-antiquark interaction potentials

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Some of the
**Research papers published in
refereed journals
2013 – 2018**

RESEARCH PUBLICATIONS IN REFEREED JOURNALS

Period 2013 -2018

1. “*Effects of Flavor dependence on Weak decays of J/ψ and Upsilon*”, Rohit Dhir, R.C. Verma & **A. Sharma**, ‘Advances of High Energy Physics’ Vol. 2013, Id 706543 (2014).
2. “*Radon exhalation in some building construction materials and effect of plastering and paints on the radon exhalation rate using fired bricks*”, A. Sharma et al, Advances in Applied Science Res.”, 5(2), 382-386 (2014).
3. “*Study of radon, thoron concentration and annual effective dose in some dwellings of Aligarh city Uttar Pradesh and Dwarka Delhi, India*”, A. Sharma et al, Int. J. of Current Research and Academic Rev., Vol.2, No.9, 234-241 (2014)
4. “*Topological Analysis of Bottom meson decays emitting two Pseudoscalar Mesons* ” Maninder Kaur, Rohit Dhir, **A. Sharma**, R.C. Verma, ‘Physics of Particles and Nuclei Letters’ , Vol 12, No.2, 230-237 (2015)
5. “*Measurements of Radon Exhalation rate from Fly ash samples collected from Kolaghat Thermal Power Plant West Bengal, India*”, A.Sharma, et. al, Int. J. of Current Research, Vol 7, No.1, 11430-11433, Jan. (2015).
6. “*Measurement of Radon exhalation Rate in Sand samples from Gopalpur and Rushikulya beach Orissa, Eastern India*” Ajay Kumar Mahur , Anil Sharma, R G. Sonkawade , D Sengupta, **A. C. Sharma** and Rajendra Prasad, J. of Phys. Procedia, 80 (2015) 140-143.
7. “*Measurement of natural radioactivity, radon exhalation rate and radiation hazard assessment in Indian cement samples*”, Anil Sharma, Manjulata Yadav, R G. Sonkawade, **A.C. Sharma**, R. C. Ramola and Rajendra Prasad, Journal of Physics Procedia , Elsevier, 80 (2015) 135-139.
8. “*Measurement of indoor Radon, Thoron in dwelling of Delhi, India using double dosimeter cups with SSNTDs*”, Anil Sharma, S. Asad Ali, R G. Sonkawade and A. C. Sharma, Journal of Physics Procedia, Elsevier, , 80 (2015) 125-127.
9. “*Natural radioactivity and radiological hazard assessment of coal samples collected from Kasimpur Thermal Power plant, Kasimpur (U.P.), India*”. Anil Sharma, R G. Sonkawade, and **A. C. Sharma** Int. J. of Low Radiation Vol. 10, No. 2, 2015.
10. “*Monitoring of indoor radon, thoron levels and annual effective dose in some dwelling of Jaipur, Rajasthan, India using double dosimeter cups*” Anil Sharma, Ajay Kumar Mahur, S. Asad Ali,R G. Sonkawade, **A. C. Sharma**, Archives of Applied Sc. Res., 2015, 7 (2):1-4.
11. “*Measurement of Radon exhalation rate, Natural Radioactivity and Radiation Hazards Assessment in Soil Samples from the Surrounding Area of Kasimpur Thermal Power Plant Kasimpur*” Anil Sharma, Ajay Kumar Mahur, R G. Sonkawade, **A. C. Sharma** and R Prasad, Int. J. of Environmental and Ecological Engg. Vol.2, No.4, 2015.

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RESEARCH PUBLICATIONS IN REFEREED JOURNALS

Theoretical High Energy Physics

1. “Connections between Yang-Mills Configuration in Minkowski and Euclidean Spaces”; M.Gupta and A.Sharma; Physical Review D 22:3085 (1980).
2. “Masses of Charmed and b-quark Hadrons in Quasi-nuclear Colored Quark model”; C. P. Singh, A. Sharma & M. P. Khanna, Pramana, 16, 487-492 (1981).
3. “Electromagnetic mass differences of b Quark Hadrons in non-relativistic Gauge theory model.” C.P. Singh, A. Sharma & M.P. Khanna, Physical Review D24, 788-790 (1981).
4. “Weak Radiative of Hyperons and Charmed Baryons in a Quark Model”, P.K. Chatley and A. Sharma, Physical review D25, 2351 (1982).
5. “Baryon Magnetic Moments in a Quark Model” A. Sharma & S. Kanwar, Pramana, 16, 73 (1981).
6. “Spin–interaction Affected Interquark distances: Effect on $V \rightarrow P\gamma$ Decays”; A. Sharma, Lettere Nuovo Cimento 33: 445-448 (1982)
7. “A Hadrons Mass formula”, C. P. Singh & A. Sharma, Physical Review D 26, 2514-16, (1982)
8. “Bag inspired Gluonic and Relativistic effects in Harmonic Oscillator Model”. A. Sharma, M. Gupta and M.P. Khanna; Physical Review D 27:2182 (1983)
9. “Nonleptonic Decay Matrix Elements in the Bag inspired Harmonic Oscillator Model”; A. Sharma, M. Gupta and M. P. Khanna; Physical Review D 29: 159-161 (1984)
10. “Compatibility of $G(A) / G(V)$, $R(P)$ and $\mu(P)$ in the Quark Models”; A. Sharma, M. P. Khanna, M. Gupta; J.Phys. G10:L241, 1984
11. “W-exchange dominance and the $\Sigma^+ \rightarrow P\gamma$ Asymmetry;” R.C. Verma, A. Sharma, Jol. of .Physics G12:1329, (1986)
12. “A reanalysis of Weak Radiative decays of Hyperion”; R.C. Verma & A. Sharma, Physical Review D 38,1443 (1988)

13. “*The Exact String Potential and Quarkonia*”; B. Bambah, K. Dharamvir, R. Kaur & A. Sharma, Physical Review D45, 1769 (1992); Erratum *ibid*, D52, 314 (1995)
14. “*Can a Gaussian type Quark-Antiquark potential work for Quarks?*” S. Kamboj & A. Sharma, Ind. J. Pure & App. Phys.32, 368-370 (1994).
15. “*Energy level inequality in the ‘Wrinkled’ Quarkonium potential;*” B. Bambah, K. Dharamvir, A. Sharma, Physical Review D 53, 4106 (1996).
16. “*An incompatibility in calculation of quarkonium mass and leptonic decay widths in potential models*”; A. Sharma, R.C. Verma & M.P. Khanna; Indian Jol. of Pure & Applied Physics 36, 259 (1998).
17. “*A Quark-Antiquark Potential extracted from Quarkonium Spectroscopic data*”; K.K. Sharma, R.C. Verma & A. Sharma, Indian Jol. of Pure and Applied Physics 37, 75-86 (1999)
18. “*Quark diagram analysis of $B \rightarrow VV$ Weak decays including Smearing effects*”; R.C. Verma & A. Sharma, Physical Review D 64, 114018 (2001)
19. “*Quark diagram analysis of weak hadronic decays of $B/c + meson$* ”; R.C. Verma & A. Sharma, Physical Review D 65, 114007 (2002)
20. “*Effects of Flavor dependence on Weak decays of J/ψ and Upsilon*”, Rohit Dhir, R.C. Verma and A. Sharma, ‘Advances of High Energy Physics’ Vol. 2013, Id 706543 (2014)
21. “*Topological Analysis of Bottom meson decays emitting two Pseudoscalar Mesons* ” Maninder Kaur, Rohit Dhir, A. Sharma, R.C. Verma, ‘Physics of Particles and Nuclei Letters’ , Vol 12, No.2, 230-237 (2015)
22. “*Charmless p-wave Mesons Emitting Decays of Bottom Mesons*”, Neelash & A.Sharma, Submitted to Phys. Rev. D (Jan 2018)
23. “*Weak decays of Charmed Baryons revisited*”, Nitika Sharma, PK Chatley, Harleen Dahiya & A. Sharma, In preparation (2017-18).
24. “*Isospectral Potentials and Quarkonia*”, Nitika Sharma, PK Chatley & A. Sharma, In preparation (2017-18).

Other Research Areas

1. “*Growth of the Lithium Floride Crystals by Edge Defined Film Fed Growth (EFG) Technique*”, Pooja Vadhan, Shruti Aggarwal, **A.C. Sharma**, SM Rao & RC Verma; Ind. J. Pure & Applied Phys. Vol48, pp394-397 (2010)

2. “*Performance Analysis of Fingerprint based Image Enhancement and Minutiae Extraction*”, R Jain, BVR Reddy & AC Sharma, IPU_2011 (Unpublished)
3. “*Growth and investigation of multicrystalline silicon sheets by capillary action shaping technique for its potential application in solar cells*”, Leena Garg, P.Kaur, S.Sharma, P.Seth, SK Pandey, S. Aggarwal, S. Kumar, A. Thakur, **Avinash Sharma**, RC Verma, SM Raro, Submitted to Jol. of Mat. Sc. & Tech. (2013)
4. “*Theoretical Simulation of the thermal profile in the Capillary Action Shaping Technique and its verification by the growth of Silicon sheets*”, Leena Garg, SMD Rao, RC Verma & **AC Sharma**, Submitted for publication (2017).
5. “*Radon exhalation in some building construction materials and effect of plastering and paints on the radon exhalation rate using fired bricks*”, A. Sharma et al, Advances in Applied Science Research”, 5(2), 382-386 (2014).
6. “*Study of radon, thoron concentration and annual effective dose in some dwellings of Aligarh city Uttar Pradesh and Dwarka Delhi, India*”, A. Sharma et al, Int. J. of Current Research and Academic Review, Vol.2, No.9, 234-241 (2014)
7. “*Measurements of Radon Exhalation rate from Fly ash samples collected from Kolaghat Thermal Power Plant West Bengal, India*”, A.Sharma, et. al, Int. J. of Current Research, Vol 7, No.1, 11430-11433, Jan. (2015).
8. “*Measurement of indoor Radon, Thoron in dwelling of Delhi, India using double dosimeter cups with SSNTDs*”, Anil Sharma, S. Asad Ali, R G. Sonkawade and **A. C. Sharma**, Journal of Physics Procedia, Elsevier, 80 (2015) 125-127.
9. “*Measurement of natural radioactivity, radon exhalation rate and radiation hazard assessment in Indian cement samples*”, Anil Sharma, Manjulata Yadav, R G. Sonkawade, **A.C. Sharma**, R. C. Ramola and Rajendra Prasad, Journal of Physics Procedia , Elsevier, 80 (2015) 135-139.
10. “*Measurement of Radon exhalation Rate in Sand samples from Gopalpur and Rushikulya beach Orissa, Eastern India*” Ajay Kumar Mahur , Anil Sharma, R G. Sonkawade , D Sengupta, **A. C. Sharma** and Rajendra Prasad, J.of Phys. Procedia (2015) Elsevier, 80 (2015) 140-143.
11. “*Natural radioactivity and radiological hazard assessment of coal samples collected from Kasimpur Thermal Power Plant, Kasimpur (U.P), India*”, Anil Sharma, R.G. Sonkawade and A.C. Sharma, International Journal of Low Radiation (In Press-2016)
12. “*Monitoring of indoor radon, thoron levels and annual effective dose in some dwelling of Jaipur, Rajasthan, India using double dosimeter cups*” Anil Sharma, Ajay Kumar Mahur,

- S. Asad Ali, R G. Sonkawade, **A. C. Sharma**, Archives of Applied Sc. Res., 2015, 7 (2):1-4.
13. “*Measurement of Radon exhalation rate, Natural Radioactivity and Radiation Hazards Assessment in Soil Samples from the Surrounding Area of Kasimpur Thermal Power Plant Kasimpur*” Anil Sharma, Ajay Kumar Mahur, R G. Sonkawade, **A. C. Sharma** and R Prasad, Int. J. of Environmental and Ecological Engg. Vol.2, No.4, 2015.
14. “*A New Model for Organizational Governance and Reachouts with enhanced efficiency, transparency & Accountability for Institutions of higher learning*”, A. Sharma (2017).

Collaboration Reports/ Technical Reports/ DRPs, etc. :

- “*Hardonic Structures and QCD: A collaboration report*”, Nihon Univ. Preprint no. NUP-B-97/01 Feb. 1997, (Japan).
- “*Atmospheric Neutrinos at LVD*”, LVD Collaboration, LNF-INFN, Frascati (Italy) 1990.
- “*Proposal for Establishment of a NanoTechnology Hub within DMIC Framework*”, Submitted to ‘Delhi-Mumbai Industrial Corridor Development Corporation, Ministry of Commerce, GOI, New Delhi (2014-16)

Books Under Preparations :

- “*Relic Neutrinos and its detection*”, Sonali Mohan & A. Sharma (2017-)
- “*E-Governance in Institutions of Higher learning*”, (2018-)
- *VISION & MISSION: Demystified* (2017-19)

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A tentative List of Invited Talks / Keynotes address/etc.

1. Invited Talk, “Recent developments in QQ/bar potentials”, Nihon U., Tokyo, Japan, 5 February 1997.
2. TPSC talk, “Recent developments in QQ/bar potentials”, Department of Physics, University of Hyderabad, Hyderabad, December 1997.
3. Invited Talk “Connection between vary small and very Big: Relic Neutrinos”, Resource Person, UGC refresher Course for Univ. & College Teachers in Physics”, Academic Staff College, Punjab U. Chandigarh, 1997.
4. Invited Talk “Quantum Computers”, UGC Refresher Course for Univ. & College Teachers in Physics, Resource Person, Academic Staff College, Department of Physics, U. of Rajasthan, Jaipur, 2000.
5. Invited Talk “Quantum Computations”, UGC Refresher Course for Univ. & College Teachers in Physics, Resource Person, Academic Staff College, Department of Physics, Himachal Pradesh U. Shimla, 2002.
6. Invited Talk “Recent developments in QQ/bar potentials”, Theoretical Physics Division, JINR, Dubna, Russia, 2004.
7. Invited Talk “Quantum Computations”, UGC Refresher Course for Univ. & College Teachers in Physics, Resource Person, Academic Staff College, Physics Department, February 25-26, 2005.
8. Invited Talk, “Quantum Computations”, Department of Physics, Panjabi U. Patiala, 26 December, 2006.
9. Invited Talk “NanoTechnology R&D in India: Status & Opportunity areas of Collaborations”, Organized by FICCI under Italy-India: Forum for the Opportunities of co-operation, 17-18 April 2008.
10. Invited Talk, “Quantum Computations”, UGC Refresher Course for Univ. & College Teachers in Physics”, Resource Person, Faculty of Science & Academic Staff College, Kurukshetra U., Kurukshetra, 27 June 2008.
11. Invited Talk, “Recent Trends in Computing: Grid Computing”, Presidential Address, National Workshop on Computers in Physics, Department of Physics, Panjabi U. Patiala, 19 January, 2009.
12. Invited Talk “Monte Carlo Techniques”, Visitors Program, Department of Physics, Punjab U. Chandigarh, 31 March, 2009.

13. Invited Talk, “Connection between vary small and very Big: Relic Neutrinos”, UGC Refresher Course for Univ. & College Teachers in Physics”, Resource Person, Academic Staff College, Delhi U. Delhi, 5 January, 2011.
14. Invited Talk “Quantum Computations”, Department of Physics, Punjab U. Chandigarh, 15 February 2011.
15. Guest of Honor, Keynote Adress, 2nd National Seminar on Trends in Condense Matter Physics including Laser applications”, Department of Physics, Burdwan U., Burdwan, 6 March 2012.
16. Invited Talk “Prospects of M.Sc. Physics Students”, Talk-cum-Interactive Session, Department of Physics, Panjabi U. Patiala 6 January 2013.
17. Guest of Honor, Keynote Adress, 2nd National Seminar on Trends in Condense Matter Physics including Laser applications”, Department of Physics, Burdwan U., Burdwan, 5 March 2013
18. Invited talk, 4th Annual International Conference on Physics, Athens Institute of Education & Research, Athens (Greece), July 18-21, 2016.
19. Session Chairman, 4th Annual International Conference on Physics, Athens Institute of Education & Research, Athens (Greece), July 18-21, 2016.
20. ‘Round Table Meeting on ‘Teaching & researching in Basic Sciences in Global World’, Athens Institute of Education & Research, Athens (Greece), July 19, 2016.
21. “Invited Talk on ‘Quantum Computations’, MS Institute of Technology, New Delhi, March 18, 2017.
22. “Invited Talk on ‘*Engineering Physics: Bridging Basic Sciences Based Research and the Technology Development & its Adaptation*’, at the WSEE International Conference, Northeastern University,, Columbus, Ohio (USA), 25-28, June 2017.
23. “Chairman, Inaugural Session”, *International Conf. on Material Research*, Faridabad, July 10, 2017

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Teaching of Courses

Course	Taught Level of teaching	Institution	Duration	Broad Topics	Text Book Level
<i>Quantum Mechanics</i>	M.Sc. (Physics /Applied Physics)	Department of Physics, Kurukshetra University	1986 - 1999	Basics, Duality, Scattering theory, Perturbation Theory, Quantum Statistical Physics, etc.	Schiff, Merzbakar
<i>High Energy Physics</i>	-do-	-do -	-do -	Quark model, QCD, Standard Model & beyond, Experimental Techniques, etc.	Perkins
<i>Electrodynamics</i>	-do-	-do-	-do-	Maxwell Equations, EM theory, etc.	Jackson
<i>Statistical Physics</i>	-do-	-do -	-do -	Ensembles, MB, FD, BE distributions, Introduction to Phase transitions, Ising Model, etc.	K Huang
<i>Advanced Quantum Mechanics</i>	M.Phil. / Pre-Ph.D.	-do-	-do-	Relativistic quantum physics: Dirac & KG Theory, Field Theory & Second Quantization, etc.	Sakurai, Mathews & Venkatesan
<i>Advanced Statistical Physics</i>	--do-	-do-	-do-	Theories of Phase transitions, Approximate Methods, Fermi & Bose Systems, Ising Model, On Sagar Solutions, Super Fluids, Critical Phenomena; Landau theory, Introduction to Renormalization Groups.	K Huang
<i>Advanced Field Theory</i>	- do -	-do-	-do-	Symetries & conservations laws, Noether theorem., Second Quantization, Dirac & BE fields, Renormalization, Feynman diagrams, Gauge Fields & Gauge Transformations, etc.	Sakurai
<i>First course /Foundational course in Physics</i>	B.Tech. (1 st & 2 nd semester)	USBAS, GGS IP U., New Delhi	1999 – 2008, 2013-2017	Optics / Lasers / Relativity / Solid State Physics / Semiconductor Physics / Super-conductivity /Quantum Mechanics / Nuclear Physics, etc.	A.Beiser

<i>Material Science</i>	B.Tech. (2 nd Semester)	- do -	2 years	Basics of Solid State Physics & Material Science, Lattices, Defects & dislocations; BCS Theory of Superconductors, etc.	Levy
<i>Advanced Computational Physics</i>	M.Tech. (Engineering Physics)	- do -	2006 – 2013 2014-2017	Monte Carlo / Non linear systems / Chaotic Dynamics / Simulations, etc.	RC. Verma, D. Porter
<i>Advanced Mathematical Physics</i>	M.Tech. (Engineering Physics)	- do -	2013	Advanced functions, Matlab, etc.	Salam, Notes only
<i>Advanced High Energy Physics</i>	Pre-Ph.D.	- do -	2011 – 2013	Neutrino Physics, Simulations for the INO Project	
<i>Research Methodology for science & technology</i>	Pre-Ph.D.	- do -	2017	Concepts in research activity, literature survey & report writing, Research Ethics; Plagiarism	. resertach