Winter 11-1-2022

Studying implications of Physics beyond the Standard Model of Particle Physics

Sumit Kumar Dr.

PERSONAL DETAILS - Dr. Sumit Kumar

Educational Qualification: Msc PhD (UGC JRF NET)
Designation: Assistant Professor, MCNS, MAHE
Postal Address: Manipal Centre for Natural Sciences
Eshwar Nagar, Manipal
Karnataka-576104
Email: sumit.kumar@manipal.edu
Nationality: Indian

EDUCATION HISTORY

Dec 2004 – Nov 2009 **Panjab Univ Chandigarh**, CHD INDIA **http://www.puchd.ac.in**
PhD in Theoretical High Energy Physics
Thesis Advisor: Prof. C.S. Aulakh

July 2002 – May 2004 **Panjab Univ Chandigarh**, Chandigarh INDIA
Master of Physics

July 1998 – April 2001 **Kurukshetra Univ Kurukshetra**, Yamuna Nagar INDIA
Bachelor of Science

Teaching EXPERIENCE

April 2022- Present

MCNS, Manipal University Udupi, Karnataka INDIA
https://manipal.edu/mcns-manipal.html

Responsibilities and achievements:

- **Theory Courses:**
  (a) Nuclear and Particle Physics
  (b) Quantum Mechanics

July 2017 -March 2022

CMR UNIVERSITY-Bangalore, Karnataka INDIA
http://www.cmr.edu.in/

Responsibilities and achievements:

- **Theory Courses:**
  (c) **Engineering Physics**: Crystal Structure, Simple Harmonic Motion, Transverse Wave Motion, Quantum Mechanics, Semiconductor Physics, Laser & Fibre optics.

  (d) **Engineering Electromagnetics**: Electrostatics, Magneto statics, Work, Energy and Potential, Maxwell Equations and UPW, UPW traveling in Different Media and Poynting's Theorem

- **Lab Practicals:** Newton's Rings, Stefan's Law, Diffraction grating, Young's Modulus, Black box, Zener diode, Transistor Characteristics, Fermi Energy, Dielectric Constant, Single slit.

- Class Coordinator for B.tech. Ist year students
- Member of Disciplinary Committee- CMR University

March 2015 –June 2017

MITS-Madanapalle, Andhra Pradesh INDIA
http://www.mits.ac.in

	Responsibilities and achievements: • **Theory Courses:** (e) **Engineering Physics**: Vectors and Kinematics, Newtonian Mechanics, Momentum, Work and Energy, Angular Momentum, Introduction-Simple Hamonic Motion, Simple Harmonic Motion, Transverse Wave Motion, Interference and Diffraction (f) **Electronic Devices**: Quantum Mechanics, (c) **Semiconductor Physics**: PN Junction Diodes, VI Characteristics, BJT and its VI Characteristics, • **Lab Practicals:** Error Analysis and Graph Drawing, Interference-Air Wedge and Newtons Ring, Diffraction- Single slit, Wavelength of Spectral Lines and Wavelength of Laser, Dispersive power of Prism, LCR Circuit, Couple pendulam, Melde's Experiment, Stewart and Gee Apparatus, Energy Gap of a material of p-n junction • NBA Coordinator for Dept. of Physics • Member of Various Committees for MITS events • Member of MITS Anti Ragging Squad • Member of faculty Selection Committee for Physics
August 2014 –Feb 2015	**RV COIIEGE OF ENGINEERING-BANGALORE**, Karnataka India **http://www.rvce.edu.in** Responsibilities and achievements: • **Theory Courses:** Quantum Mechanics, Elasticity, Crystal Structure, Electrical properties of Metals and Semiconductors, Lasers and fiber optics. • **Lab Practicals:** Interference-Air Wedge and Newtons Ring, LCR Circuit, Moment of Inertia and Modulus of Elasticity, CE Transistor, Stefan's Law and Band gap of Semiconductor • Member of NBA Committee for Dept. Of Physics • Member of Physics Syllabus Improvement Committee • External Member of faculty Selection Committee for Physics

Post-Doctoral Research EXPERIENCE

Oct 2012 – April 2014	**Yonsei University**, Seoul South Korea **http://www.yonsei.ac.kr** *Research Professor – Contract Position* Responsibilities and achievements: • Research: Collider Physics and Phenomenology of BSM theories, Neutrino Physics • Guiding PhD students about Research Problems
July 2011 – Aug 2012	. **Indian Institute of Science**, Bangalore India **http://www.iisc.ernet.in** *Centenary Postdoctroal Fellow – Contract Position* Responsibilities and achievements: • Research: Lepton flavor Violation, Collider Physics and Phenomenology of BSM theories, Neutrino Physics • Organizer Weekly Beyond Standard Model Meeting • Worked in Various Collaborations within and outside India
Dec 2009 – June 2011	. **Indian Institute of Science**, Bangalore India **http://www.iisc.ernet.in** *Research Associate – Contract Position* Responsibilities and achievements: • Research: Lepton flavor Violation, Collider Physics and Phenomenology of BSM theories, Neutrino Physics • Organizer Weekly Beyond Standard Model Meeting • Worked in Various Collaborations within and outside India

RESEARCH PUBLICATIONS

INTERNATIONAL JOURNALS:

S.No.	Name & Dept. of the faculty	Name of the Journal	Title of the Paper	ISSN Number with SCI/ SCI Expanded-Thomson Reuters	Volume (Issue), Page numbers	Citation Index (Impact Factor)
1.	Dr. Sumit Kumar, CMR University Bangalore	JHEP	Bounds on Slow Roll at the Boundary of the Landscape **e-Print:** arXiv: 1810.09406	1029-8479	JHEP**1903**, 029(2019)	79(6.220)
2.	Dr. Sumit Kumar, CMR University Bangalore	JHEP	Bounds on Slow Roll and the de Sitter Swampland **e-Print:** arXiv: 1807.05193	1029-8479	JHEP**1911**, 075(2019)	493(6.220)

3.	Dr. Sumit Kumar, CMR University	IJMPA	Model independent Analysis of Dirac CP Violating Phase for some well known mixing scenarios **e-Print:** arXiv:1806.08239 **(Single Author)**	1793-656X	Int.J.Mod. Phys.**A36**(2021) **no.18**,2150118	07(1.699)
4.	Dr. Sumit Kumar, CMR University Bangalore	IJMPA	A Systematic Analysis of perturbations for Hexagonal mixing matrix **e-Print:** arXiv:1806.06658 **(Single Author)**	1793-656X	Int.J.Mod. Phys.**A34**(2019) **no.01**,1950005	04(1.699)
5.	Dr. Sumit Kumar, CMR University Bangalore	Nucl. Phys. B	Consistency of perturbed Tribimaximal, Bimaximal and Democratic mixing with Neutrino Mixing data **e-Print:** arXiv:1712.02212 **(Single Author)**	0550-3213	Nucl.Phys. **B931** (2018), 469-505	10(3.678)
6.	Dr. Sumit Kumar, Yonsei Univ South Korea	Phys.Rev. D	Top Yukawa Coupling measurement with indefinite CP Higgs in e+e- → ttb\Phi **e-Print:** arXiv:1405.6465	1550-7998	Phys.Rev.**D 90** (2014) 1, 014016	11(4.684)
7.	Dr. Sumit Kumar, Yonsei Univ South Korea	JHEP	Corrections for tribimaximal, bimaximal and democratic neutrino mixing matrices **e-Print:** arXiv:1308.3054	1029-8479	JHEP**1310**, 128(2013)	26(6.220)
8.	Dr. Sumit Kumar, IISC Bangalore	Phys.Rev. D	Probing the indefinite CP nature of the Higgs Boson through decay distributions in the process e+e- → ttb\Phi **e-Print:** arXiv:1304.4414	1550-7998	Phys.Rev.**D 87**, 114002(2013)	12(4.684)
9.	Dr. Sumit Kumar, IISC Bangalore	Phys Lett B	Anomalous Triple Gauge Boson Couplings in e+e- → gam gam for Non Commutative Standard Model **e-Print:** arXiv:1111.5173	0370-2693	Phys. Lett. **B708**, 150-156(2012)	14(6.019)
10.	Dr. Sumit Kumar, IISC Bangalore	JHEP	TeV Scale Implications of Non Commutative Space time in Laboratory Frame with Polarized Beams **e-Print:** arXiv:1105.5203	1029-8479	JHEP **1107**, 024(2011)	18(6.220)
11.	Dr. Sumit Kumar, IISC Bangalore	Phys.Rev. D	Isolating CP-violating gamZZ coupling in e+e- → gam Z with transverse beam polarizations **e-Print:** arXiv:1104.3645	1550-7998	Phys.Rev.**D 85**, 034006(2012)	17(4.864)

12.	Dr. Sumit Kumar, IISC Bangalore	Phys Lett B	Bounds on fourth generation induced LeptonFlavourViolating double insertions in Supersymmetry **e-Print:** arXiv:1103.1011	0370-2693	Phys.Lett.**B 702**,370-376(2011)	8(6.019)
13.	Dr. Sumit Kumar, Panjab Univ Chandigarh	Nucl. Phys. B	TheNew Minimal Supersymmetric GUT: Spectra, RG analysis and Fermion Fits **e-Print:** arXiv:0807.0917	0550-3213	Nucl. Phys. **B857**, 101-142(2012)	72(3.678)
14.	Dr. Sumit Kumar, Panjab Univ Chandigarh	Mod. Phys. Lett. **A**	Correcting alpha(3)(M(Z)) in the NMSGUT **e-Print:** arXiv:0710.4018	0217-7323	Mod. Phys. Lett.**A24**,1711-1719(2009)	19(1.338)
15.	Dr. Sumit Kumar, Panjab Univ Chandigarh	Nucl. Phys. B	MSGUT: From bloom to doom **e-Print:** hep-ph/0512224	0550-3213	Nucl. Phys. **B757**, 47-78(2006)	104(3.678)

National / International Paper Proceedings (Full length papers in seminar/ conferences etc.):

S.No.	Name & Dept. of the faculty	Name of the Journal	Name of National/ International conference/ Seminar etc.	Title of the paper	ISSN/ ISBN Number with SCI/ SCI Expanded-Thomson Reuters	Volume (Issue), Page numbers	Citation Index
1.	Dr. Sumit Kumar, Yonsei Univ South Korea	J.Phys.Conf.Series	National Conference on Contemporary Issues in High Energy Physics and Cosmology (NC-HEPC 2013)	Probing the type-III seesaw model through e+e- → Sig+ Sig- at ILC	1742-6588	J.Phys.Conf. Ser. **481** (2014) 012018	03

RECOGNISED ACHIEVEMENTS

Yonsei Research Professor Fellowship 2012-2014
IISC Centenary Fellowship 2011-2012
IISC Research Associate Fellowship 2009–2011
UGC Junior/Senior Research Fellowship 2004-2009
Distinction in Physics(XII) 1998