

Md. Naimuddin *Editor*

# XXII DAE High Energy Physics Symposium

Proceedings, Delhi, India,  
December 12–16, 2016

# **Springer Proceedings in Physics**

Volume 203

The series Springer Proceedings in Physics, founded in 1984, is devoted to timely reports of state-of-the-art developments in physics and related sciences. Typically based on material presented at conferences, workshops and similar scientific meetings, volumes published in this series will constitute a comprehensive up-to-date source of reference on a field or subfield of relevance in contemporary physics. Proposals must include the following:

- name, place and date of the scientific meeting
- a link to the committees (local organization, international advisors etc.)
- scientific description of the meeting
- list of invited/plenary speakers
- an estimate of the planned proceedings book parameters (number of pages/articles, requested number of bulk copies, submission deadline).

More information about this series at <http://www.springer.com/series/361>

Md. Naimuddin  
Editor

# XXII DAE High Energy Physics Symposium

Proceedings, Delhi, India, December 12–16,  
2016

 Springer

*Editor*

Md. Naimuddin  
Department of Physics  
University of Delhi  
New Delhi  
India

ISSN 0930-8989

ISSN 1867-4941 (electronic)

Springer Proceedings in Physics

ISBN 978-3-319-73170-4

ISBN 978-3-319-73171-1 (eBook)

<https://doi.org/10.1007/978-3-319-73171-1>

Library of Congress Control Number: 2018931165

© Springer International Publishing AG, part of Springer Nature 2018, corrected publication 2018

This work is subject to copyright. All rights are reserved by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

The publisher, the authors and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, express or implied, with respect to the material contained herein or for any errors or omissions that may have been made. The publisher remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Printed on acid-free paper

This Springer imprint is published by the registered company Springer International Publishing AG part of Springer Nature

The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

# Preface

The research in the area of high energy physics remains as active as ever. With the turning on of Large Hadron Collider (LHC) in 2010, the field has received an enormous push in terms of its reach and breadth. The LHC opens up new horizons and opportunities for the physicists to discover and measure the things that have not been done so far. In the sector of neutrino physics, there are plenty of activities going on, both theoretical and experimental. With the neutrino physics experiments spread across three continents, the field is emerging even stronger. Similar is the case with particle astrophysics and cosmology where new horizons are being explored. As a result of ever-expanding reach of high energy experiments, the demand for better and more sophisticated detector and electronics has also been growing. This has brought a significant push in the detector and instrumentation research. Although the high energy physics research falls under the category of fundamental science and deals with the basic building blocks of universe, its outcome has much diverse consequences. The technology that is developed for pursuing this basic research has found applications in many areas of immediate human benefit.

The activity of high energy physics is spread across all over the world, but the high energy physicist maintains a very close working relationship among themselves. This stimulates the research collaborations spanning people across many countries and continents. In order to exchange ideas, and share and discuss results in person, the physicists meet with each other at various occasions. One such regular occasion is the DAE-BRNS high energy physics symposium. The DAE-BRNS high energy physics (HEP) symposium is a conference series held every other year in India. The DAE-BRNS HEP symposium is the premiere event organized in the field of high energy physics and covers almost all aspects relevant to Particle Physics. The deliberations and discussions cover both theory and experiment with variety of physics interests like particle, neutrino, flavor, heavy ion, astroparticle, physics beyond standard model, societal applications. The last symposium in the series took place at Department of Physics and Astrophysics, University of Delhi, New Delhi, from December 12 to 16, 2016. The symposium saw participation of approximately 400 physicists, postdocs, engineers, and

students. The symposium academic program consisted of invited plenary talks, invited parallel talks or mini-review talks, and contributed parallel talks. In order to encourage and motivate the young and amateur physicists, a poster session with more than 100 posters was also organized.

The symposium also drew a very enthusiastic participation from Industrial partners and engineering institutions. During the symposium, results from running experiments like CMS, ATLAS, ALICE, LHCb, Belle were discussed in detail. The prospects of planned experiments like DUNE, INO-ICAL were also discussed. For the first time, the symposium had a dedicated theme of societal applications: medical physics, imaging, etc. A good number of presentations were made on this important topic, and future collaborations were formed.

This book contains the selected papers that were presented during the symposium. Each of these papers has been peer-reviewed before accepted for the final publication. The papers cover a wide variety of results and ideas on topics like standard model physics, neutrino physics, beyond standard model physics, heavy ion and QCD physics, Particle Astrophysics and Cosmology. The book also contains papers presented outlining the future experiments and recent developments in detector development and instrumentation. Recent progress in formal theory has also been discussed. Finally, the ideas and efforts in harnessing the high energy physics research spin-offs in terms of societal applications are also included.

New Delhi, India

Md. Naimuddin

# Acknowledgements

Any event having hundreds of participants coming from all over the world is not an easy one to organize successfully. The XXII DAE-BRNS high energy physics symposium had about 400 participants coming from all over the world. During the preparation and organization of the symposium, many individuals and organizations provided their support and help because of which the symposium could be organized flawlessly. After the symposium was over, the next task was to review hundreds of manuscripts submitted for publication as proceedings. Many individuals agreed and devoted their valuable time in reviewing the manuscripts in order to maintain the quality and scientific value of these papers. While it is not possible to mention the contributions of all the individuals by their name but this event would not have been possible without their unending support, so I would like to thank everyone who lent their support in any way during the entire process. In particular, I would first like to show my heartfelt gratitude and thanks to the members of the National Organizing Committee and Local Organizing Committee for their unconditional support throughout. The event would not have been possible without the support of the Delhi University administration and staff. My sincere thanks go to the Delhi University administration and support staff. I would also like to thank the Head of the Department of Physics and Astrophysics for their support during the symposium. An event of such a scale requires lot of resources and funding to meet all the expenses. I am extremely thankful to Department of Atomic Energy—Board of Research in Nuclear Sciences for their support for the symposium. The contributions and participation of our sponsors CAEN, Hamamatsu, Tektronix—Keithley, Nucleonix, AMETEK, and KAF International are duly acknowledged. We would also like to thank Tata Institute of Fundamental Research, Mumbai, and Institute of Mathematical Science, Chennai, for their support. The symposium and the review process of proceedings would not have been possible without the support of my colleagues in the high energy physics group of Delhi University. My heartfelt thanks go to Prof. Brajesh Choudhary, Prof. Kirti Ranjan, Dr. Ashok Kumar, Dr. Ashutosh Bhardwaj, and Dr. Sanjeev Kumar Verma. Thanks also go to my Ph.D. students and postdocs. A special thanks to Dr. Shivali Malhotra and



Dr. Daljeet Kaur for their valuable support in the organization of the symposium and also in the review process of proceedings. Thanks also go to all the Ph.D. students, postdocs, and support staff of our high energy physics group. And in the end, I would like to thank my family, my father, my wife, my son, my daughter, and my niece for their valuable support and sacrifices during the run-up to the symposium, during the symposium and all through for keeping up with me.

# Contents

<b>1</b>	<b>Exploration of the QCD Phase Diagram at Finite Baryon Density Region: Recent Results from RHIC Beam Energy Scan-I</b> .....	<b>1</b>
	Nu Xu	
<b>2</b>	<b>Silicon Sensors for Experiments in High Energy Physics</b> .....	<b>7</b>
	Alexander Dierlamm	
<b>3</b>	<b>Physics and Detectors at Future Linear Colliders</b> .....	<b>13</b>
	Kiyotomo Kawagoe	
<b>4</b>	<b>The Hierarchy Problem and Physics Beyond the Standard Model</b> .....	<b>17</b>
	Gautam Bhattacharyya	
<b>5</b>	<b>Electroweak Physics at the LHC</b> .....	<b>21</b>
	Gerhard Brandt	
<b>6</b>	<b>Exotics in Flavor Factories</b> .....	<b>27</b>
	Seema Bahinipati	
<b>7</b>	<b>Mini Review on Transport Coefficients of Quark-Gluon-Plasma</b> .....	<b>33</b>
	Victor Roy	
<b>8</b>	<b>Results on Quarkonium and Heavy Meson Production in PbPb Collisions by CMS Experiment</b> .....	<b>39</b>
	Prashant Shukla	
<b>9</b>	<b>Recent Status of the Understanding of Neutrino-Nucleus Cross Section</b> .....	<b>43</b>
	H. Haider, M. Sajjad Athar and S. K. Singh	
<b>10</b>	<b>Review of Latest RHIC Results and Future Perspectives</b> .....	<b>49</b>
	Lokesh Kumar	

<b>11</b>	<b>Status of INO-ICAL Detector</b> .....	<b>55</b>
	Venktesh Singh	
<b>12</b>	<b>Search for Sterile Neutrino Signal in the <math>{}^7\text{Be}</math> Solar Neutrino Measurement with KamLAND</b> .....	<b>59</b>
	Ashish Sharma, Govind Singh, Gazal Sharma, Shankita Bhardwaj, Surender Verma and B. C. Chauhan	
<b>13</b>	<b>A Model for Anisotropic Strange Stars</b> .....	<b>65</b>
	Debabrata Deb, Sourav Roy Chowdhury, Saibal Ray, Farook Rahaman and B. K. Guha	
<b>14</b>	<b>Re-discovery of the SM Higgs Boson in Diphoton Channel at <math>\sqrt{s} = 13</math> TeV at CMS in LHC</b> .....	<b>69</b>
	Arnab Purohit	
<b>15</b>	<b>Neutrino Phenomenology Within Inverse and Type II Seesaw Based on <math>S_4</math> Flavor Symmetry</b> .....	<b>73</b>
	Ananya Mukherjee and Mrinal Kumar Das	
<b>16</b>	<b>Twist-Six Corrections to <math>\eta\gamma</math> and <math>\eta'\gamma</math> Transition Form Factors in QCD</b> .....	<b>79</b>
	Janardan P. Singh and Shesha D. Patel	
<b>17</b>	<b>Recent Underlying Event Measurements at <math>\sqrt{s} = 13</math> TeV</b> .....	<b>83</b>
	Rajat Gupta	
<b>18</b>	<b>Pion Mass Modification in Presence of External Magnetic Field</b> .....	<b>89</b>
	S. P. Adhya, M. Mandal, S. Biswas and P. K. Roy	
<b>19</b>	<b>Can Stopped Cosmic Muons Be Used to Estimate the Magnetic Field in the Prototype ICAL Detector?</b> .....	<b>93</b>
	Neha, G. Majumder, B. Satyanarayana, E. Pathaleswar and V. M. Datar	
<b>20</b>	<b>Techniques to Improve Time Resolution of Large Area RPCs</b> .....	<b>97</b>
	A. D. Bhatt, V. M. Datar, G. Majumder, N. K. Mondal, Pathaleswar and B. Satyanarayana	
<b>21</b>	<b>Graviton Portal to Dark Matter in Universal Extra Dimensions</b> .....	<b>101</b>
	Mathew Thomas Arun and Divya Sachdeva	
<b>22</b>	<b>Various Studies with Gas Electron Multiplier (GEM) Detectors</b> .....	<b>105</b>
	Shivali Malhotra, Md. Naimuddin, Ashok Kumar, Mohit Gola, Anshika Bansal and Aashaq Shah	

**23  $Z_2$  Odd Sector Leading to Left-Right Symmetric Unification . . . . . 109**  
 Triparno Bandyopadhyay and Amitava Raychaudhuri

**24 Momentum Anisotropy, Chromo-Weibel Instability and QGP Phenomenology . . . . . 113**  
 Vinod Chandra

**25 Response Functions and Collective Modes of Hot QCD Medium . . . . . 117**  
 M. Yousuf Jamal, S. Mitra and V. Chandra

**26 Electromagnetic Response of a Hot QCD Medium in Heavy Ion Collisions . . . . . 121**  
 Sukanya Mitra and Vinod Chandra

**27 A Proof- of-Principle for Time of Flight-Positron Emission Tomography Imaging . . . . . 125**  
 Rajesh Ganai, Shaifali Mehta, Mehulkumar Shiroya, Mitali Mondal, Zubayer Ahammed and Subhasis Chattopadhyay

**28 Development of 6-Gap Bakelite Multi-gap Resistive Plate Chamber (MRPC) . . . . . 129**  
 Rajesh Ganai, Mitali Mondal, Shaifali Mehta, Zubayer Ahammed and Subhasis Chattopadhyay

**29 Conductivity of Holographic Superconductor in Soft-Wall Model . . . . . 133**  
 Neha Bhatnagar

**30 Why T2K Should Run in Dominant Neutrino Mode to Discover CP Violation? . . . . . 137**  
 Monojit Ghosh

**31 Near-Horizon Geometry and the Entropy of a Minimally Coupled Scalar Field in the Asymptotically Flat Black Holes . . . . 141**  
 Kaushik Ghosh

**32 PeV Neutrinos from Local Magnetars . . . . . 147**  
 Rajat K. Dey

**33 Parton Distribution Functions of Proton in a Light-Front Quark-Diquark Model . . . . . 151**  
 Tanmay Maji and Dipankar Chakrabarti

**34 Extended Scaling in Neutrino Majorana Mass Matrix . . . . . 155**  
 Probir Roy

<b>35</b>	<b>Non-universal <math>Z'</math> Boson Effects in Rare Radiative Decay <math>B_s^0 \rightarrow \mu^+ \mu^- \gamma</math> . . . . .</b>	<b>159</b>
	Debika Banerjee, Priya Maji and Sukadev Sahoo	
<b>36</b>	<b>Bulk Viscosity Coefficient of Hadronic Matter . . . . .</b>	<b>163</b>
	Sabyasachi Ghosh, Sandeep Chatterjee and Bedangadas Mohanty	
<b>37</b>	<b>Higgs Searches via WW Decay Channel Using the CMS Detector . . . . .</b>	<b>167</b>
	Ankita Mehta	
<b>38</b>	<b>Digital System for Multi-parametric Analysis in Physics Application . . . . .</b>	<b>171</b>
	Massimo Venaruzzo	
<b>39</b>	<b>Search for Supersymmetry in Vector Boson Fusion Topology Using Proton–Proton Collision Data at the LHC . . . . .</b>	<b>175</b>
	Priyanka Kumari, Amandeep Kaur Kalsi, Nitish Dhingra, Vipin Bhatnagar and J. B. Singh	
<b>40</b>	<b>Test Beam Study of Gas Electron Multiplier (GEM) Detectors for the Upgrade of CMS Endcap Muon System . . . . .</b>	<b>179</b>
	Ram Krishna Sharma, Md. Naimuddin, Brian Dorney, Jeremie Alexandre Merlin, Archana Sharma, Marek Michal Gruchala, Priyanka Kumari and Ankita Mehta	
<b>41</b>	<b>Model Study of Two Particle Correlations with Identified Trigger Particles in p-Pb Collisions at LHC Energy . . . . .</b>	<b>185</b>
	Debojit Sarkar, Subikash Choudhury and Subhasis Chattopadhyay	
<b>42</b>	<b>Searching for SUSY with Multijets and Missing Transverse Momentum . . . . .</b>	<b>189</b>
	Aditee Rane	
<b>43</b>	<b>Modified TBM and Role of a Hidden <math>\mathbb{Z}_2</math> . . . . .</b>	<b>193</b>
	Rome Samanta and Mainak Chakraborty	
<b>44</b>	<b>Search for Excited Quark Resonances in the Photon+Jet Invariant Mass Spectrum at 13 TeV . . . . .</b>	<b>197</b>
	Varun Sharma	
<b>45</b>	<b>Measurements of Higgs Boson Production and Properties in Di-photon Decay Channel Using Data Collected by CMS Detector at Center of Mass Energy of 13 TeV . . . . .</b>	<b>201</b>
	Kuntal Mondal	
<b>46</b>	<b>Search for Dark Matter and Large Extra Dimensions in the Photon + MET Final State in pp Collisions at <math>\sqrt{s} = 13</math> TeV . . . . .</b>	<b>205</b>
	Ashim Roy	

<b>47</b>	<b>Prompt Muon Contribution at High Energies</b> . . . . .	209
	Sharda Pandey, Satendra Kumar Chauhan, Jyotsna Singh and R. B. Singh	
<b>48</b>	<b>Performance of the CMS 2S <math>p_T</math> Module Prototype Using CBC2 Readout at Beam Tests</b> . . . . .	215
	Suvankar Roy Chowdhury	
<b>49</b>	<b>Quarkonium Production and Suppression with CMS Detector at LHC</b> . . . . .	219
	Vineet Kumar	
<b>50</b>	<b>Development of a High Speed Data Acquisition System for the Detectors at High Luminosity LHC</b> . . . . .	223
	Shuaib Ahmad Khan, Jubin Mitra and Tapan K Nayak	
<b>51</b>	<b>Non-zero <math>U_{e3}</math> in the Presence of eV Scale Sterile Neutrino</b> . . . . .	227
	S. Dev, Radha Raman Gautam and Desh Raj	
<b>52</b>	<b>Two Zeros in the Magic Neutrino Mass Matrix</b> . . . . .	231
	Radha Raman Gautam and Sanjeev Kumar	
<b>53</b>	<b>Can We Measure <math>\theta_{23}</math> Octant in 3 + 1 Scheme?</b> . . . . .	235
	Sanjib Kumar Agarwalla, Sabya Sachi Chatterjee and Antonio Palazzo	
<b>54</b>	<b>Right-Handed Currents in <math>B \rightarrow K^* \ell^+ \ell^-</math></b> . . . . .	239
	Rusa Mandal	
<b>55</b>	<b>Exclusion Limits on Minimal Anomaly Free U(1) Extensions of the Standard Model</b> . . . . .	243
	Tanumoy Mandal, Andreas Ekstedt, Rikard Enberg, Gunnar Ingelman and Johan Löfgren	
<b>56</b>	<b>Identified Particle Production in U+U Collision at <math>\sqrt{s_{NN}} = 193</math> GeV in STAR</b> . . . . .	247
	Debadeepti Mishra	
<b>57</b>	<b>Quark-Lepton Complementarity Model Based Predictions for <math>\theta_{23}^{PMNS}</math> with Neutrino Mass Hierarchy</b> . . . . .	251
	Gazal Sharma, Shankita Bhardwaj, B. C. Chauhan and Surender Verma	
<b>58</b>	<b>Probing <math>CP</math> Violation in Neutrino Oscillation Experiments and Leptonic Unitarity Quadrangle</b> . . . . .	257
	Surender Verma, Shankita Bhardwaj, B. C. Chauhan and Gazal Sharma	

<b>59</b>	<b>Weibull Approach to Study Multiplicity Moments in <math>e^+e^-</math> and <math>p\bar{p}</math> Collisions</b> . . . . .	263
	Ranjit Nayak, Ashutosh Kumar Pandey and Sadhana Dash	
<b>60</b>	<b>Study of Centrality and Beam Energy Dependence of <math>dN_{ch}/d\eta</math> and <math>dE_T/d\eta</math> at Midrapidity Using Two Component Approach</b> . . . . .	267
	Ashutosh Kumar Pandey, Ranjit Nayak, Basanta. K. Nandi, Sadhana Dash and Priyanka Sett	
<b>61</b>	<b>Degenerate Quantum Vacua and Kerr Family of Black Holes</b> . . . . .	271
	Sunita Singh, Supriya Kar, K. Priyabrat Pandey and Abhishek K. Singh	
<b>62</b>	<b>Measurement of Charged Jet Cross Sections and Jet Shapes in Proton-Proton Collisions at <math>\sqrt{s} = 2.76</math> TeV with the ALICE Detector at LHC</b> . . . . .	275
	Rathijit Biswas	
<b>63</b>	<b>Decay Properties of <math>J^\pm</math> State of Quarkonia in Dirac Relativistic Formalism</b> . . . . .	281
	Manan Shah, P. C. Vinodkumar, Tanvi Bhavsar and Bhavin Patel	
<b>64</b>	<b>Analyzing the Mesonic Spectrum Using the Method of Schottky Anomaly</b> . . . . .	285
	Aritra Biswas	
<b>65</b>	<b>Constraining Non-Standard Interactions of Neutrino Using ICAL Detector at INO</b> . . . . .	289
	Amina Khatun, Sabya Sachi Chatterjee, Tarak Thakore and Sanjib Kumar Agarwalla	
<b>66</b>	<b>Study of Trapping Probability in Proton Irradiated Silicon Pad Detectors Using Transient Current Technique Simulations</b> . . . . .	293
	Geetika Jain, Chakresh Jain, Ranjeet Dalal, Ashutosh Bhardwaj and Kirti Ranjan	
<b>67</b>	<b>Charged Higgs Search in Bosonic Decays Using Jet Substructure at the LHC</b> . . . . .	297
	Riley Patrick, Pankaj Sharma and Anthony G. Williams	
<b>68</b>	<b>Light Nuclei Production in Heavy-Ion Collisions in STAR at RHIC BES Energies</b> . . . . .	301
	Sabita Das	

<b>69</b>	<b>Cosmological Pair Creation of Universe and Anti Universe at Big Bang</b> . . . . .	305
	Abhishek K. Singh, K. Priyabrat Pandey, Sunita Singh and Supriya Kar	
<b>70</b>	<b>Effects of Leptonic Non-unitarity on Charged Lepton Flavor Violation, Leptogenesis and Lightest Neutrino Mass</b> . . . . .	309
	Gayatri Ghosh and Kalpana Bora	
<b>71</b>	<b>A Density of States for QGP Fireball Formation in Heavy Ion Collisions Incorporating Hydrodynamical Features in the Model</b> . . . . .	313
	Agam K. Jha, R. Ramanathan, K. K. Gupta and S. S. Singh	
<b>72</b>	<b>Study of <math>B_s^0 \rightarrow \phi\phi \rightarrow KKKK</math> with the CMS Phase II Detector</b> . . . . .	317
	Rajarshi Bhattacharya, Suchandra Dutta and Subir Sarkar	
<b>73</b>	<b>Study of the Rare Decays <math>B_{s,d}^* \rightarrow \mu^+ \mu^-</math></b> . . . . .	321
	Suchismita Sahoo and Rukmani Mohanta	
<b>74</b>	<b>Heavy-Flavour Measurements in p-Pb Collisions with ALICE at the LHC</b> . . . . .	325
	Jitendra Kumar	
<b>75</b>	<b>New Tensor Interaction as the Source of the Observed CP Asymmetry in <math>\tau \rightarrow K_S \pi \nu_\tau</math></b> . . . . .	329
	Lobsang Dhargyal	
<b>76</b>	<b>Phase Portraits of Higher Dimensional FRW Cosmology in <math>R^p \exp(\lambda R)</math> Gravity Filled with Non-perfect Fluid</b> . . . . .	333
	Sebika K. Banik, Debika K. Banik and Kalyan Bhuyan	
<b>77</b>	<b>Optimal Renormalization and the Extraction of Strange Quark Mass from Semi-leptonic <math>\tau</math>-Decay</b> . . . . .	337
	Balasubramanian Ananthanarayan and Diganta Das	
<b>78</b>	<b>Extraction of the Strong Coupling Constant from the Measurement of Inclusive Multijet Event Cross Sections in pp Collisions at Center of Mass Energy of 8 TeV</b> . . . . .	341
	Anterpreet Kaur	
<b>79</b>	<b>Coalescing Versus Merging of Energy Levels in One-Dimensional Potentials</b> . . . . .	345
	Zafar Ahmed, Sachin Kumar, Achint Kumar and Mohammad Irfan	



<b>80</b>	<b>Differential Cross Section Measurement of the Drell-Yan Process at 13 TeV proton-proton Collisions with the CMS Detector</b> . . . . .	349
	Ridhi Chawla	
<b>81</b>	<b>Galactic Cosmic Energy Spectrum Based Simulation of Total Equivalent Dose in Human Phantom</b> . . . . .	353
	Kajal Garg and Sonali Bhatnagar	
<b>82</b>	<b>Light Flavor Hadron Production as a Function of Multiplicity in pp Collisions at <math>\sqrt{s} = 7</math> TeV Measured with ALICE</b> . . . . .	357
	Kishora Nayak	
<b>83</b>	<b>Different Freezeout Scenarios in Large and Small Systems</b> . . . . .	361
	Sandeep Chatterjee, Ajay Kumar Dash and Bedangadas Mohanty	
<b>84</b>	<b>Study of <math>Z'</math> Mediated FCNC Effects on <math>B_s \rightarrow \phi \mu^+ \mu^-</math> Semileptonic Decay</b> . . . . .	365
	Barilang Mawlong and Soram Robertson Singh	
<b>85</b>	<b>Timing and Induced Charge Profile of Large Size RPC Detector for INO-ICAL Experiment</b> . . . . .	369
	Ankit Gaur, Aman Phogat, Moh. Rafik, Ashok Kumar and Md. Naimuddin	
<b>86</b>	<b>Explaining <math>R(D^{(*)})</math>, <math>R_K</math> and <math>(g - 2)_\mu</math> in a <math>E_6</math> Motivated Left-Right Model</b> . . . . .	373
	Diganta Das, Chandan Hati, Girish Kumar and Namit Mahajan	
<b>87</b>	<b>SU(6) Grand Unification of 3-3-1 Model</b> . . . . .	377
	Frank F. Deppisch, Chandan Hati, Sudhanwa Patra, Utpal Sarkar and José W. F. Valle	
<b>88</b>	<b>Search for Majorana Neutrino via <math>B_c</math> Decay Modes</b> . . . . .	381
	Sanjoy Mandal	
<b>89</b>	<b>Impact of Active-Sterile Neutrino Mixing on Physics Potential of Long Baseline Neutrino Oscillation Experiments</b> . . . . .	385
	C. Soumya and Rukmani Mohanta	
<b>90</b>	<b>Measurement of <math>Z +</math> Jets Differential Cross Section at <math>\sqrt{s} = 8</math> and 13 TeV with the CMS Detector</b> . . . . .	389
	Suman B. Beri, Vipin Bhatnagar and Sandeep Kaur	
<b>91</b>	<b>Detection of Low Mass Vector Mesons in the Muon Detector of CBM Experiment</b> . . . . .	393
	Ekata Nandy and Subhasis Chattopadhyay	

<b>92</b>	<b>Type Ia Supernovae: Non-Gaussianity and Direction Dependence in Union2 Catalogue</b> . . . . .	397
	Meghendra Singh, Shashikant Gupta, Amit Sharma, Satendra Sharma and Anshu Gupta	
<b>93</b>	<b>Probing Non-holomorphic MSSM via Precision Constraints, Dark Matter and LHC Data</b> . . . . .	403
	Utpal Chattopadhyay and Abhishek Dey	
<b>94</b>	<b>Simulation of Response of Detector Materials to Muon Induced Neutrons for DINO Experiment</b> . . . . .	407
	K. K Meghna and Bedangadas Mohanty	
<b>95</b>	<b>Searching the Inert Scalars Through the Dijet Plus Missing Transverse Energy Final States at High Luminosity LHC</b> . . . . .	411
	P. Poullose, Shibnanda Sahoo and K. Sridhar	
<b>96</b>	<b>Measurement of D-Meson Production in pp Collisions with ALICE at the LHC</b> . . . . .	415
	Ankita Sharma	
<b>97</b>	<b>Event-by-Event Charge Separation in Au+Au Collisions at <math>\sqrt{s_{NN}} = 200</math> GeV with the STAR Detector at RHIC</b> . . . . .	419
	Anjali Attri	
<b>98</b>	<b>The INO-ICAL Sensitivity for the Separate Measurement of Neutrinos/Anti-neutrinos Parameters</b> . . . . .	423
	Daljeet Kaur, Zubair Ahmad Dar, Sanjeev Kumar and Md. Naimuddin	
<b>99</b>	<b>CP Sensitive Observable Exploring Tau Lepton Pairs from Higgs at the LHC</b> . . . . .	427
	Partha Konar, Pankaj Sharma and Abhaya Kumar Swain	
<b>100</b>	<b>Sensitivities of INO-ICAL to 2–3 Oscillation Parameters by the Extension of Observed Muon Energy Range and by Constraining the <math>\nu_{\mu} - \bar{\nu}_{\mu}</math> Flux Ratio</b> . . . . .	431
	Lakshmi S. Mohan and D. Indumathi	
<b>101</b>	<b>Diphoton Emission from Equilibrium Quark-Gluon Plasma</b> . . . . .	435
	S. Somorendro Singh	
<b>102</b>	<b>Vacuum Stability with Leptoquark</b> . . . . .	439
	Rusa Mandal	
<b>103</b>	<b>Search for <math>Z'</math> Resonances Decaying to Tau Pairs in pp Collisions Using CMS Detector at the LHC</b> . . . . .	443
	Amandeep Kaur Kalsi, J. B. Singh and Vipin Bhatnagar	

<b>104</b>	<b>Bounds on Neutrino Decay Lifetime with ICAL Detector</b> . . . . .	447
	Chandan Gupta, Sandhya Choubey, Srubabati Goswami, S. M. Lakshmi and Tarak Thakore	
<b>105</b>	<b>Measurement of Azimuthal Correlations Between D Mesons and Any Charged Particle in pp Collisions at <math>\sqrt{s} = 7</math> TeV with ALICE</b> . . . . .	451
	Sonia Rajput	
<b>106</b>	<b>Gas Proportion Studies on the Operation of Resistive Plate Chambers</b> . . . . .	455
	K. Raveendrababu and P. K. Behera	
<b>107</b>	<b>Variation of Fine Structure Constant and Electron Properties</b> . . . . .	459
	S. Ghosh	
<b>108</b>	<b>Intersecting D3-Branes at Finite Temperature</b> . . . . .	463
	Varun Sethi, Sudipto Paul Chowdhury and Swarnendu Sarkar	
<b>109</b>	<b>Jet Identification with Zest</b> . . . . .	467
	Ankita Budhraja and Ambar Jain	
<b>110</b>	<b>Trimaximal <math>TM_1</math> and <math>TM_2</math> Mixings as Perturbation of Tri-Bimaximal Mixing</b> . . . . .	471
	Kanwaljeet S. Channey and Sanjeev Kumar	
<b>111</b>	<b>Study of Hyperon Polarization at T2K, MicroBooNE and MINERvA</b> . . . . .	475
	F. Akbar, M. Rafi Alam, M. Sajjad Athar, S. Chauhan and S. K. Singh	
<b>112</b>	<b>Sequential Quarkonium Production via Recombination in Heavy-Ion Collisions</b> . . . . .	479
	Captain R. Singh, S. Ganesh and M. Mishra	
<b>113</b>	<b>Studies on Reconstruction Algorithms for Material Imaging with MST</b> . . . . .	485
	Sridhar Tripathy, Abhik Jash, Nayana Majumdar, Supratik Mukhopadhyay, Sandip Sarkar and Satyajit Saha	
<b>114</b>	<b>Open Charm Hadroproduction as a Probe of Gluon Sivers Function</b> . . . . .	489
	Rohini M. Godbole, Abhiram Kaushik and Anuradha Misra	
<b>115</b>	<b>Effect of Initial Fluctuations on Quarkonia Suppression</b> . . . . .	493
	Partha Bagchi, Nirupam Dutta and Ajit M. Srivastava	

<b>116</b>	<b>Identified Hadron Production in Proton-Proton Collisions at <math>\sqrt{s} = 13</math> TeV with ALICE at the LHC</b> . . . . .	497
	Sourav Kundu	
<b>117</b>	<b>Constraints on Leptophilic Light Dark Matter from Internal Heat Flux of Earth</b> . . . . .	501
	Bhavesch Chauhan and Subhendra Mohanty	
<b>118</b>	<b>Ion Backflow Studies Related to a Proposed Micromegas Based TPC for the International Linear Collider</b> . . . . .	505
	Deb Sankar Bhattacharya, Purba Bhattacharya, Supratik Mukhopadhyay, Nayana Majumdar, Sandip Sarkar, Paul Colas, David Attié, Serguei Ganjour, Aparajita Bhattacharya and Sudeb Bhattacharya	
<b>119</b>	<b>Time Resolution and Characteristic Studies of MWPC Detectors with Argon Based Gas Mixtures</b> . . . . .	509
	Rajendra Nath Patra, R. N. Singaraju, S. Biswas, T. K. Nayak and Y. P. Vijoyi	
<b>120</b>	<b>BRST Qantization on Torus Knot</b> . . . . .	513
	Vipul Kumar Pandey and Bhabani Prasad Mandal	
<b>121</b>	<b>Single and Double Differential Drell-Yan Cross Section Measurements Using the CMS Detector</b> . . . . .	517
	Genius Walia	
<b>122</b>	<b>Study of the Associated Production of Higgs Boson with a Single Top Quark</b> . . . . .	521
	Pallabi Das	
<b>123</b>	<b>Search for Model Independent Di-Higgs Production in the <math>bb\tau_h\tau_h</math> channel at CMS</b> . . . . .	525
	Ram Krishna Dewanjee	
<b>124</b>	<b>Double Parton Scattering Studies at the Large Hadron Collider Using the CMS Detector</b> . . . . .	529
	R. Kumar, A. Mehta, R. Gupta, S. Bansal, V. Bhatnagar, K. Mazumdar and J. B. Singh	
<b>125</b>	<b>Supernova Neutrinos: Fast Flavor Conversions Near the Core</b> . . . . .	533
	Manibrata Sen	
<b>126</b>	<b>Exploring Compressed Top Squark Region with Kinematic Variables</b> . . . . .	539
	Partha Konar, Tanmoy Mondal and Abhaya Kumar Swain	

<b>127</b>	<b>Results and Future Prospects of Exclusive Vector Meson Production with pPb Collisions at CMS</b> .....	543
	Ruchi Chudasama	
<b>128</b>	<b>Towards Efficient Reconstruction of Semi-invisible Events from Higgs at the LHC</b> .....	547
	Akanksha Bhardwaj, Partha Konar and Abhaya Kumar Swain	
<b>129</b>	<b>Gravitino Production in a Thermal Universe</b> .....	551
	Richa Arya, Namit Mahajan and Raghavan Rangarajan	
<b>130</b>	<b>Design and Characterization of Discrete Analog Front-End for Resistive Plate Chamber Detector</b> .....	555
	Purnendu Kumar, Sankaran Aniruddhan and Anil Prabhakar	
<b>131</b>	<b>Stabilizing Electroweak Vacuum Through Modified Chaotic Inflation</b> .....	559
	Abhijit Kumar Saha and Arunansu Sil	
<b>132</b>	<b>Particle Identification with the TOP and ARICH Detectors at Belle II</b> .....	563
	S. Sandilya	
<b>133</b>	<b>Feasibility Study for Development of a PET Device Based on Multigap Resistive Plate Chambers</b> .....	567
	M. Nizam, B. Satyanarayana and R. R. Shinde	
<b>134</b>	<b>Development of Fast, Low Power 8-Channel Amplifier-Discriminator Board for the RPCs</b> .....	571
	Puneet Kanwar Kaur, Pathaleswar, M. N. Saraf, B. Satyanarayana and R. R. Shinde	
<b>135</b>	<b>Development of a Resistive Plate Chamber with Heat Strengthened Glass</b> .....	575
	G. Majumder, V. M. Datar, S. D. Kalmani, N. K. Mondal, S. Mondal, B. Satyanarayana and R. R. Shinde	
<b>136</b>	<b>A Proposed Method for Extracting the Proton Geometry in the bSat Dipole Model from HERA Data</b> .....	579
	Tobias Toll	
<b>137</b>	<b>Elemental Analysis of Glass and Bakelite Electrodes Using PIXE Facility</b> .....	583
	Manisha, V. Bhatnagar, J. S. Shahi, S. Verma, B. P. Mohanty and A. Kumar	
<b>138</b>	<b>Calibration and Auxiliary Unit for INO's ICAL Data Acquisition System</b> .....	587
	P. Kaur, A. Lokapure, Pathaleswar, M. N. Saraf, B. Satyanarayana, D. Sil, S. S. Upadhyaya and E. Yuvaraj	

<b>139 Muon Chamber Endcap Upgrade of the CMS Experiment with Gas Electron Multiplier (GEM) Detectors and Their Performance</b> . . . . .	591
Mohit Gola	
<b>140 Numerical Investigation on RPC Time Response</b> . . . . .	595
Abhik Jash, Sridhar Tripathy, Nayana Majumdar, Supratik Mukhopadhyay, Satyajit Saha and Subhasis Chattopadhyay	
<b>141 Composite Inert Doublet Dark Matter</b> . . . . .	599
Siddhartha Karmakar	
<b>142 Belle II Silicon Vertex Detector: Design Requirements and Construction Status</b> . . . . .	603
D. Dutta and G. B. Mohanty	
<b>143 A Holographic Description of BCS Instability at Finite Baryon Density</b> . . . . .	607
Swarnendu Sarkar, Sudipto Paul Chowdhury, S. Kalyana Rama, Balachandran Sathiapalan and Nilanjan Sircar	
<b>144 Generalized Degeneracies and Their Resolution in Neutrino Oscillation Experiments</b> . . . . .	611
Newton Nath, Srubabati Goswami and K. N. Deepthi	
<b>145 Studies on Gain of Triple GEM Using Different Argon Based Gas Mixtures</b> . . . . .	615
Prasant Kumar Rout, Deb Sankar Bhattacharya, Purba Bhattacharya, A. R. Sahasransu, Supratik Mukhopadhyay and Nayana Majumdar	
<b>146 Simulation Studies of the Lambda Disks Detector for the PANDA Experiment</b> . . . . .	621
Ajay Kumar and Ankhi Roy	
<b>147 Flux Tubes, Field Configuration and Non-Perturbative Dynamics of QCD</b> . . . . .	625
Deependra Singh Rawat, H. C. Chandola, H. C. Pandey and D. Yadav	
<b>148 Long Range Correlations in P–Pb Collisions at <math>\sqrt{s_{NN}} = 5.02</math> TeV with ALICE</b> . . . . .	629
Greeshma Koyithatta Meethaleveedu	
<b>149 Noise Rejection from the Hadron Showers in the INO-ICAL Detector</b> . . . . .	633
Jafar Sadiq and Prafulla Kumar Behera	
<b>150 Review of (Anti-)Nuclei Production from High Energy Experiments</b> . . . . .	639
Natasha Sharma	

<b>151</b>	<b>Search for the Pair-Production of First Generation Leptoquarks in pp Collisions at <math>\sqrt{s} = 13</math> TeV</b> . . . . .	643
	M. A. Bhat, B. Mahakud, S. I. Cooper, G. B. Mohanty, T. Aziz and P. Rumerio	
<b>152</b>	<b>Signatures of T and CPT Violation in Presence of Sterile Neutrino</b> . . . . .	647
	Jyotsna Singh and R. B. Singh	
<b>153</b>	<b>Comparison of Silicon, Germanium and Diamond Sensors as Trackers in Collider Experiments</b> . . . . .	651
	Shyam Kumar and Raghava Varma	
<b>154</b>	<b>Timing Studies of a Large Size Oil-Free Bakelite Resistive Plate Chamber</b> . . . . .	653
	Rajesh Ganai, Mehulkumar Shiroya, Zubayer Ahammed and Subhasis Chattopadhyay	
<b>155</b>	<b>D and B Mesons in Hot and Dense Symmetric Nuclear Medium</b> . . . . .	657
	Rahul Chhabra and Arvind kumar	
<b>156</b>	<b>Coulomb Modified Glauber Model Analysis for Interaction of <math>^{56}\text{Fe}_{26}</math>, <math>^{84}\text{Kr}_{36}</math>, <math>^{132}\text{Xe}_{54}</math>, <math>^{197}\text{Au}_{79}</math> and <math>^{238}\text{U}_{92}</math> Projectiles</b> . . . . .	661
	N. Marimuthu, V. Singh and S. S. R. Inbanathan	
<b>157</b>	<b>Discriminating Hybrid Textures of Neutrino Mass Matrix in the Light of Latest Neutrino Data and Baryon Asymmetry</b> . . . . .	665
	Rupam Kalita	
<b>158</b>	<b>Lepton Flavor Violating Higgs Decay</b> . . . . .	669
	Priya Maji, Debika Banerjee and Sukadev Sahoo	
<b>159</b>	<b>Excited States Searches for Light and Heavy Flavour Quarks with CMS Data at <math>\sqrt{s} = 13</math> TeV</b> . . . . .	673
	Rocky Bala Garg, Varun Sharma and Brajesh C. Choudhary	
<b>160</b>	<b>Bianchi III Cosmologies for the Form <math>f(R) = R - \beta/R^n</math> Using the Palatini Formalism</b> . . . . .	677
	Debika K. Banik, Sebika K. Banik and Kalyan Bhuyan	
<b>161</b>	<b>Explaining the Observed Deviation in <math>R(D^{(*)})</math> in an Anomalous 2HDM</b> . . . . .	681
	Lobsang Dhargyal	
<b>162</b>	<b>Study of Intermittency in Pb-Pb Collisions at 158 A GeV</b> . . . . .	683
	Sunil Dutt	

**163 Lepton Flavor Violation in a Model with Softly Broken  $\mathbb{Z}_4$  Symmetry** ..... 687  
 Roopam Sinha

**164 Lepton Number Violation and Lepton Flavour Violation in Left-Right Symmetric Model** ..... 691  
 Happy Borgohain and Mrinal Kumar Das

**165 Search for CP Violation in  $D^0 \rightarrow K_S^0 K_S^0$  Decay at Belle and Belle II** ..... 693  
 N. Dash

**166 Charged and Neutral Current Pion Production in Neutrino-Nucleus Scattering** ..... 697  
 Kapil Saraswat, Prashant Shukla, Vineet Kumar and Venktesh Singh

**167 Freeze-Out of Strange Hadron in pp, pPb and PbPb Collisions at LHC Energies** ..... 701  
 Kapil Saraswat, Prashant Shukla, Vineet Kumar and Venktesh Singh

**168 Study of  $B_c^+ \rightarrow D^+ \nu \bar{\nu}$  Decay in the Light-Cone Quark Model** ..... 705  
 Nisha Dhiman and Harleen Dahiya

**169 Event Selection and Background Estimation for Decay  $B^0 \rightarrow J/\psi \gamma$**  ..... 709  
 Rajeev Kumar

**170 Bounds on Sterile Neutrino Component in the Solar Neutrino Flux** ..... 713  
 Govind Singh, Ashish Sharma, Gazal Sharma, Shankita Bhardwaj, Surender Verma and B. C. Chauhan

**171 Study of Bulk Properties in Cu+Au, Cu+Cu and Au+Au Collision at  $\sqrt{s_{NN}} = 200$  GeV Using AMPT and UrQMD Models** ..... 717  
 Sumit Kumar, Lokesh Kumar and Natasha Sharma

**172 Mass Spectra of Bottonia Using Linear Potential in Relativistic Frame Work** ..... 721  
 Tanvi Bhavsar, Manan Shah, Bhavin Patel and P. C. Vinodkumar

**173 Mass Spectra of Doubly Heavy  $\Xi_{bc}$  Baryons** ..... 725  
 Zalak Shah and Ajay Kumar Rai



<b>174</b>	<b>Mass and Hadronic Decay Widths of Z States as Di-meson Molecule</b> .....	729
	N. R. Soni, R. R. Chaturvedi, A. K. Rai and J. N. Pandya	
<b>175</b>	<b>Implications of Fermionic Dark Matter on Recent Neutrino Oscillation Data</b> .....	733
	Shivaramakrishna Singirala	
<b>176</b>	<b>Study of <math>D^*</math> Polarization to Discriminate New Physics in <math>\bar{B} \rightarrow D^* \tau \bar{\nu}</math></b> .....	737
	Suman Kumbhakar, Ashutosh Kumar Alok, Dinesh Kumar and S. Uma Sankar	
<b>177</b>	<b>Resonance Measurements in p–Pb Collisions at <math>\sqrt{s_{NN}} = 5.02</math> TeV with ALICE</b> .....	741
	Sarita Sahoo	
<b>178</b>	<b>Large Extra Dimensions Search in the Photon + MET Final State in pp Collisions at <math>\sqrt{s} = 13</math> TeV at CMS in LHC</b> .....	745
	Shamik Ghosh	
<b>179</b>	<b>Effects of <math>Z'</math> Mediated FCNC on <math>B \rightarrow K \mu^+ \mu^-</math> in the 331 Model</b> .....	749
	Soram Robertson Singh and Barilang Mawlong	
<b>180</b>	<b>Measurement of Underground Cosmic Muons Charge Ratio at INO-ICAL Detector</b> .....	751
	Jaydip Singh and Jyotsna Singh	
<b>181</b>	<b>Performance Study of Large Size RPC Detector for INO-ICAL Experiment</b> .....	755
	Aman Phogat, Ankit Gaur, Ashok Kumar, Moh. Rafik and Md. Naimuddin	
<b>182</b>	<b>Cobimaximal Neutrino Mixing with <math>A_4</math> Symmetry</b> .....	759
	M. Sruthilaya and R. Mohanta	
<b>183</b>	<b>Optimisation and Characterisation of Glass RPC</b> .....	763
	R. Kanishka, Vipin Bhatnagar and D. Indumathi	
<b>184</b>	<b>Calculating Neutral Current Events at the Proposed ICAL Detector in INO</b> .....	767
	R. Thiru Senthil and D. Indumathi	
<b>185</b>	<b>Statistical Hadronisation in High Energy Particle Collisions</b> .....	771
	S. Sharma, S. Thakur and M. Kaur	

<b>186</b>	<b>A Novel Assembly Procedure of GE1/1 Detectors for CMS High Luminosity Phase of the LHC</b> . . . . .	775
	Aashaq Shah, Ashok Kumar, Md. Naimuddin, Mohit Gola and Shivali Malhotra	
<b>187</b>	<b>Charged Particle Multiplicity and Transverse Energy Distribution Using Weibull–Glauber Approach in Heavy-Ion Collisions</b> . . . . .	779
	Bharati Naik, Nirbhay K. Behera, Sadhana Dash, Basanta K. Nandi and Tanmay Pani	
<b>188</b>	<b>Transverse Momentum Distributions in Spin-1 Diquark Model</b> . . . . .	781
	Navdeep Kaur, Narinder Kumar and Harleen Dahiya	
<b>189</b>	<b>Event-by-Event Charge Separation in Pb-Pb Collisions at <math>\sqrt{s_{NN}} = 2.76</math> TeV with ALICE at the LHC</b> . . . . .	785
	Sonia Parmar	
<b>190</b>	<b>Rotating Boson Star Under Weak Gravity Potential</b> . . . . .	789
	Bharti Jarwal and S. Somorendro Singh	
<b>191</b>	<b>A Model Study of D-h Azimuthal Correlation at LHC Energies</b> . . . . .	793
	S. K. Tripathy, M. Younus, Z. Naik and P. K. Sahu	
<b>192</b>	<b>Impact of New Physics on CP-Asymmetries at Long Baselines</b> . . . . .	795
	Jogesh Rout, Mehedi Masud and Poonam Mehta	
<b>193</b>	<b>Multiplicity Distributions in Hadronic and Leptonic Collisions Using Weibull Model</b> . . . . .	799
	Priyanka Sett, Sadhana Dash and Basanta Kumar Nandi	
<b>194</b>	<b><math>K_s^0</math> Production at the Main Injector Particle Production Experiment at Fermilab</b> . . . . .	801
	Amandeep Singh, Ashok Kumar and Lalit Saini	
<b>195</b>	<b>Front-End Readout for INO-ICAL GRPC</b> . . . . .	805
	Moh. Rafik, Aman Phogat, Ankit Gaur, Ashok Kumar and Md. Naimuddin	
<b>196</b>	<b>Production of D-Mesons in p+p and p+Pb Collisions at LHC Energies</b> . . . . .	809
	R. C. Baral, S. K. Tripathy, M. Younus, Z. Naik and P. K. Sahu	
<b>197</b>	<b>Study of Discrete Symmetries for <math>B_s</math> Meson System</b> . . . . .	813
	Bharti Kindra and Namit Mahajan	

<b>198</b>	<b>Texture Zeros of the Lepton Mass Matrices</b> . . . . .	817
	Neelu Mahajan	
<b>199</b>	<b>Study of a Triple GEM Detector Operated with Different Argon Based Gas</b> . . . . .	821
	Rajendra Nath Patra, R. N Singaraju, S. Biswas, Z. Ahammed, T. K. Nayak and Y. P. Viyogi	
<b>200</b>	<b>Masses of P-Wave Charmonia in Isospin Asymmetric Strange Hadronic Matter Using QCD Sum Rules</b> . . . . .	825
	Sushil Kumar	
<b>201</b>	<b>HO Weight Factor in Particle Flow Algorithm in CMS Experiment</b> . . . . .	829
	Suman Chatterjee and Gobinda Majumder	
<b>202</b>	<b>Measurement of Missing Transverse Energy in CMS Experiment</b> . . . . .	833
	Pallabi Das and Kajari Mazumdar	
<b>203</b>	<b>Study of Medium Effects for Structure Properties of Quark Matter Star in Color Flavour Locking Phase</b> . . . . .	837
	Suman Thakur and Shashi K. Dhiman	
<b>204</b>	<b>Simulation Study of a Possible Indium-Based Cryogenic Detector for Electron Neutrinos</b> . . . . .	841
	Neha, G. Majumder and V. M. Datar	
<b>205</b>	<b>Measurement of Angular Distribution and Integrated Flux of Cosmic Ray Muons Using 2m × 2m RPC Stack at IICHEP Madurai</b> . . . . .	845
	S. Pethuraj, V. M. Datar, S. D. Kalmani, G. Majumder, N. K. Mondal, S. Mondal, P. Nagaraj, Pathaleswar, K. C. Ravindran, M. N. Saraf, B. Satyanarayana, R. R. Shinde, Dipankar Sil, S. H. Thoker, S. S. Upadhya, P. Verma and E. Yuvaraj	
<b>206</b>	<b>Development of a ±6 kV Bias Supply for ICAL Detectors of INO</b> . . . . .	847
	A. Manna, B. Satyanarayana, R. R. Shinde, M. N. Saraf, D. Sil and E. Yuvaraj	
<b>207</b>	<b>Estimation of Leak of a Resistive Plate Chamber by Monitoring Absolute Pressure</b> . . . . .	851
	Suryanarayan Mondal, V. M. Datar, S. D. Kalmani, G. Majumder, N. K. Mondal and B. Satyanarayana	
<b>208</b>	<b>Understanding Light Nuclei Production Using A Multi Phase Transport (AMPT) Model</b> . . . . .	855
	Ashpreet Kaur, Lokesh Kumar and Natasha Sharma	

<b>209</b>	<b>Orbital Dynamics Using Pseudo-Newtonian Potential</b> . . . . .	859
	Tamal Sarkar and Arunava Bhadra	
<b>210</b>	<b>Ethernet Scheme for Command and Data Acquisition for the INO ICAL Detector</b> . . . . .	863
	P. Nagaraj, M. N. Saraf, B. Satyanarayana, D. Sil, S. S. Upadhya and E. Yuvaraj	
<b>211</b>	<b>Curvature Effect on QGP Equation of State</b> . . . . .	867
	Yogesh Kumar and S. Somorendro Singh	
<b>212</b>	<b>Performance Metrics of a GPU Based Track Fitting Code for the INO Prototype Stack</b> . . . . .	871
	Deepak Samuel, Varun Neelamana, S. Mishra, Anwasha Mahapatra, Chandrima Mallick, Lopamudra Nayak, Swetalin Mohapatra and M. Pooja	
<b>213</b>	<b>Probing Wrong-Sign <math>hbb</math> Couplings in <math>h \rightarrow \Upsilon \gamma</math></b> . . . . .	873
	Tanmoy Modak, Jorge C. Romão, Rahul Srivastava, João P. Silva and Soumya Sadhukhan	
<b>214</b>	<b>Studying Medium Modification of Jets Using Jet Evolution with Energy Loss (JEWEL) Model</b> . . . . .	877
	Subikash Choudhury, Rathijit Biswas, S. K. Prasad, Supriya Das and Subhasis Chattopadhyay	
<b>215</b>	<b>Hints on Neutrino Mixings from Flavour Data</b> . . . . .	881
	Disha Bhatia	
<b>216</b>	<b>Strong Decays and Coupling Constants of 1P and 1D Bottom Meson</b> . . . . .	885
	Pallavi Gupta and A. Upadhyay	
<b>217</b>	<b>Design and Development of Gas Leakage Station for Gas Electron Multiplier (GEM) Chamber</b> . . . . .	889
	Rizwan Ahmad, Aashaq Shah, Ashok Kumar, Md. Naimuddin, Mohit Gola and Shivali Malhotra	
<b>218</b>	<b>Design and Fabrication of a Controlled Water Based Cooling System for CBM Muon Chamber</b> . . . . .	893
	D. Nag, S. Biswas, S. Chattopadhyay, S. Das, A. K. Dubey, C. Ghosh, A. Kumar, S. K. Prasad and J. Saini	
<b>219</b>	<b>Development and Simulation of Silicon PAD</b> . . . . .	897
	Preeti Dhankher, Manoj Jadhav and Raghava Varma	
<b>220</b>	<b>Photon-Scalar Oscillation in Magnetized Plasma</b> . . . . .	901
	Manoj K. Jaiswal and Avijit K. Ganguly	

<b>221</b>	<b>Search for Heavy Neutral Higgs in Di-Boson Final State at <math>\sqrt{s} = 13</math> TeV</b> . . . . .	905
	Aashaq Shah, Ashok Kumar and Mario Pelliccioni	
<b>222</b>	<b>Transverse Single Spin Asymmetry in <math>J/\psi</math> Production at <math>\sqrt{s} = 200</math> GeV</b> . . . . .	909
	Bipin Sonawane, Rohini Godbole, Abhiram Kaushik, Anuradha Misra and Vaibhav Rawoot	
<b>223</b>	<b>Some Studies Using Capillary for Flow Control in a Closed Loop Gas Recirculation System</b> . . . . .	913
	S. D. Kalmani, Surya Mondal, R. R. Shinde and P. V. Hunagund	
<b>224</b>	<b>Constraints on Electromagnetic Properties of Neutrinos with Sub-keV Germanium Detectors</b> . . . . .	917
	Lakhwinder Singh and H. T. Wong	
<b>225</b>	<b>Dark Matter, Neutrino Mass and Muon (<math>g - 2</math>) in a <math>U(1)_{L_\mu} - L_\tau</math> Model</b> . . . . .	919
	Anirban Biswas, Sandhya Choubey and Sarif Khan	
<b>226</b>	<b>Measurement of the Double-Differential Inclusive Jet Cross Section in Proton-Proton Collisions at 13 TeV Centre-of-Mass Energy with the Compact Muon Solenoid Detector</b> . . . . .	923
	Sourav Dey	
	<b>Erratum to: Flux Tubes, Field Configuration and Non-Perturbative Dynamics of QCD</b> . . . . .	E1
	Deependra Singh Rawat, H. C. Chandola, H. C. Pandey and D. Yadav	
	<b>Index</b> . . . . .	927

# Contributors

**S. P. Adhya** Experimental High Energy Physics and Applications Group, Variable Energy Cyclotron Centre, Kolkata, India

**Sanjib Kumar Agarwalla** Institute of Physics, Bhubaneswar, India; Homi Bhabha National Institute, Mumbai, India

**Zubayer Ahammed** EHEP&A Group, Variable Energy Cyclotron Centre, HBNI, Kolkata, India

**Rizwan Ahmad** Department of Physics and Astrophysics, University of Delhi, Delhi, India

**Zafar Ahmed** Nuclear Physics Division, Bhabha Atomic Research Centre, Trombay, India

**F. Akbar** Department of Physics, Aligarh Muslim University, Aligarh, India

**M. Rafi Alam** Department of Physics, Aligarh Muslim University, Aligarh, India

**Ashutosh Kumar Alok** Indian Institute of Technology, Jodhpur, India

**Balasubramanian Ananthanarayan** Centre for High Energy Physics, Indian Institute of Science, Bangalore, India

**Sankaran Aniruddhan** Indian Institute of Technology Madras, Chennai, India

**Mathew Thomas Arun** Department of Physics, Mar Thoma College, Thiruvalla, Kerala, India; Department of Physics and Astrophysics, University of Delhi, New Delhi, India

**Richa Arya** Physical Research Laboratory, Ahmedabad, India

**M. Sajjad Athar** Department of Physics, Aligarh Muslim University, Aligarh, India

**David Attié** CEA Saclay, Gif Sur Yvette, France