Dr. Prabhakar Palni - Curriculum Vitae

CONTACT INFORMATION

Room AG-28, Department of Physics,
Goa University
Taleigao Plateau, Goa, India, 403206

Ph:+91 8669609214
prabhakar.palni@unigoa.ac.in
prabhakar.palni@cern.ch

website: http://ppalni.web.cern.ch/ppalni/
https://www.unigoa.ac.in/faculty/prabhakar-palni.html
Publications list on iNSPIRE: https://inspirehep.net/author/profile/P.Palni.1

CURRENT EMPLOYER

Department of Physics
Goa University August 2020-present

EDUCATION

University of New Mexico (UNM), New Mexico, US

- Ph.D., Physics — May 2010-May 2014

  Dissertation Title: *Evidence for the Heavy Baryon Resonance State Λ_b^{*0} Observed with the CDF II Detector, and Studies of New Particle Tracking Technologies Using the LANSCE Proton Beam.*
  Advisors: Prof. Igor Gorelov and Prof. Sally Seidel

- M.S., Physics — Aug 2008-May 2010

Mumbai University, Mumbai, India

- M.Sc., Physics (Laser and Plasma Specialization) — Jun 2004-July 2006

Goa University (St. Xavier's College), Goa, India

- B.Sc., Physics — June 2001-June 2004

FELLOWSHIP & HONORS

- Young Scientist Fellowship, Krakow, Poland (12,000 PLN) 2019-2020
- Young Researcher Fellowship, QUARK MATTER, Kobe, Japan ($600) 2015
- Japan-US Experimental Institute for Physics with Exotic Nuclei Grant Fellowship 2014
- Fermilab URA Visiting Scholar Fellowship, IL, United States ($8,856) 2012-2013
- Ministry of Human Resource Development (MHRD) Fellowship, IIT Guwahati, India 2006-2008
- Mumbai University Physics Department Scholarship, second year of M.Sc. 2005-2006
- St. Xavier's College Scholarship, for distinction and standing first in B.Sc. Physics 2003-2004

RESEARCH POSITIONS

Post-doctoral Research Fellow June 2018 - August 2020
AGH University of Science and Technology, Krakow, Poland
Supervisor: Assist. Prof. Iwona Grabowska-Bold
Project: *Top quark production in p-Pb collisions at a center-of-mass energy of 8.16 TeV and measurement of Light-By-Light scattering in Pb-Pb collision at 5.02 TeV with the ATLAS experiment.*

Post-doctoral Research Fellow April 2015 - May 2018
Central China Normal University, Wuhan, China
Supervisor: Prof. Paolo Bartalini and Prof. Daicui Zhou
Project: *Study of the Multiple Parton Interactions (MPI) with the ALICE detector.*

Visiting Scholar Jun-Feb 2015
National Superconducting Cyclotron Laboratory (NSCL), East Lansing, MI
Supervisor: Prof. Betty Tsang
Project: *Development of the SPiRITROOT Software Framework for Symmetry Energy Project Data Analysis.*

Research Assistant Jan 2011-May 2014
Department of Physics and Astronomy, University of New Mexico
Supervisors: Prof. Igor Gorelov and Prof. Sally Seidel
Project: *Evidence for a Heavy Baryon Resonance State of Λ_b^{*0} with CDF detector and Studies of New Particle Tracking Technologies Using the LANSCE Proton Beam.*

Research Assistant Jan-Dec 2010
Department of Physics and Astronomy, University of New Mexico
Supervisor: Prof. Michael Gold
Project: *DEAP Liquid Argon Detector for Dark Matter and Neutrinos.*

Junior Research Fellow Aug 2006-Jul 2008
Department of Physics, Indian Institute of Technology (IIT), Guwahati
Supervisor: Assoc. Prof. P. K. Giri
Project: *Synthesis of ZnO Nanostructures and Study of its Growth Structures, Annealing Effects, Electrical, and Optical Properties.*

Summer Intern Summer 2005
Tata Institute of Fundamental Research (TIFR), Mumbai
Supervisor: Dr. S. S. Chandvankar
Project: *Characterization of AlGaAs based Heterostructure Laser Diodes.*

Service Work & Outreach

- Framework for Superchic generator interface to ATLAS software June 2018 - present
- ALICE DCS shift operator April-May 2018
- LEGO Train Operator for PWG MM group in ALICE June 2015-2018
- Developer of A Large Inclusive B/Charm Physics MC Sample, CDF, Fermilab Sept 2011-Mar 2014
- Consumer Operator at Collider Detector at Fermilab (CDF), Fermilab. Sept 2011
- Shifts as well as in charge on the experiment, New Radiation-hard Technologies for LHC Detectors, at LANSCE, Los Alamos National Lab, NM. Dec 2012, Sept 2013, Feb 2014
- Cafe Scientifique Educational Outreach meeting and presentation to high school students, New Mexico Museum of Natural History and Science. Mar 2014
- The judge at Regional Science Olympiad Competition, University of New Mexico. Feb 2011

Workshops & Training Programs

- ATLAS Induction Day and Software Tutorial, CERN, Switzerland July 2018
- CERN-Fermilab HCP Summer School, CERN, Switzerland Aug-Sep 2017
- New Progress in Heavy Ion Collision: What is Hot in the QGP?, CCNU, Wuhan October 2015
- Mini-workshop on jet physics in ALICE at LHC Run II, CCNU, Wuhan, China April 2015
- 3^{rd} Annual Cyber Infrastructure (CI) Days Pre-Conference Workshop on Advanced Topics in HP Computing, Institute for Cyber Enabled Research, East Lansing, MI October 2014
- OSG user school on high-throughput computing (HTC) systems, University of Wisconsin, WI June 2013
- Supercomputing in Plain English, Part I/II, (XSEDE) conference, San Diego, CA July 2013

- 22^{nd} Radiation hard semiconductor devices for very high luminosity colliders (RD50) Workshop, University of New Mexico, Albuquerque, NM June 2013
- 7^{th} Fermilab-CERN Hadron Collider Physics Summer School, Batavia, IL Aug 2012
- National Optical Astronomy Observatory (NOAO) Gemini Data Workshop, Tucson, AZ July 2010
- 10^{th} Great Lakes Cosmology Workshop, Kavli Institute, University of Chicago, Chicago, IL June 2010
- Short term Course on A Roadmap of QM to String Theory, by AICTE, IITG, Guwahati Sept 2007
- Short term Course on Mathematical Methods in Engineering & Science, IIT Kanpur July 2006
- Workshop on Astrophysics conducted by IUCAA, Pune, MH Dec 2006
- Workshop on LASERS at Khalsa College, Mumbai, MH Aug 2005

Travel Awards & Grants

- 8^{th} International Workshop on MPI at the LHC, Chiapas, Mexico ($285) November 2016
- 7^{th} International Workshop on MPI at the LHC, ICTP, Trieste, Italy ($1200) November 2015
- SPiRIT TPC International Collaboration Meeting (JUSEIPEN grant), at Rare Isotope Beam Factory (RIBF), RIKEN, Wako, Japan ($3,700) June 2014
- APS meeting of Division of Particles and Fields (DPF), University of California, CA ($470) Aug 2013
- Extreme Science and Engineering Discovery Environment (XSEDE), San Diego, CA ($460) July 2013
- Open Science Grid (OSG) user school, University of Wisconsin, Madison, WI ($350) June 2013
- Fermilab-CERN Hadron Collider Physics Summer Symposium, Fermilab, IL ($375) Aug 2012
- Annual Meeting of the Four Corners Section of the APS, Tuscon, AZ ($100) Oct 2011
- UNM GPSA Specialized Travel Grant for 10^{th} Great Lakes Cosmology Workshop ($402) June 2010

Computer Skills

- Languages: C, C++, Fortran, and Python.
- Data Processing and Statistical Packages: ROOT, RIVET, RooStats, RooFit, GENFIT, and Origin
- Simulation Packages: PYTHIA8, HERWIG7, StarLight, SuperChic3, EPOS3, DIPSY, Geant4 and Garfield (Magbolz)
- Application Softwares: LabVIEW, HTCondor, and TeX.
- Numerical and Technical Computing Languages: Matlab and Maple

Hardware & Instrument. Skills

- Characterization & Synthesizing Techniques: HPGe Gamma-Ray Spectrometer, Scanning electron Microscopy (SEM), Electron Spin Resonance Spectrometer (ESR), X-Ray Diffractometer (XRD), Dynamic Light Scattering Nanoparticle Size Analyzer (DLS), Raman Spectrometer, Photo-Luminance and UV-Visible Spectrometer, Magnetron RF and DC sputtering technique for thin film deposition, Chemical Vapor Deposition Method, vacuum thermal evaporation & electron beam deposition technique, and ball milling method.

Research Experience

RESEARCH PROJECT (ATLAS)

- "Top quark production in proton-nucleus collisions at $\sqrt{s_{NN}} = 8.16$ TeV with ATLAS" (Ongoing, chair): Top quark cross section measurement in proton-lead collisions provides useful information on the nuclear parton distribution function, particularly sensitive to the nuclear gluon densities at large Bjorken-x (x > 0.04). Secondly, top quarks are produced & decayed before interacting with the medium (because of very short lifetime), hence it is a unique tool to study parton energy loss in the medium. In this work, top quarks are reconstructed in both lepton+jet and di-lepton decay channels using the data sample corresponds to an integrated luminosity of 160 nb^{-1}. The di-lepton channel is analyzed for the first time in this study in heavy-ion collisions. Total production cross sections would be extracted and compared to the extrapolated measurement from the proton-proton system at 8 TeV and to the theoretical predictions.

- "Measurement of light-by-light scattering in Pb+Pb collisions at $\sqrt{s_{NN}} = 5.02$ TeV with ATLAS" (Ongoing): The light-by-light (LbyL) scattering ($\gamma\gamma \to \gamma\gamma$) is a quantum-mechanical phenomena forbidden in the classical theory of electrodynamics. However, at LHC, the first evidence from ATLAS results shown that ultra-relativistic colliding lead ions create large electromagnetic field strengths which make light-by-light scattering highly possible. This analysis focuses on data collected in November 2018 using dedicated Level-1 triggers for LbyL process, which can detect photons with transverse energy as low as 2.5 GeV. The signature of light-by-light scattering is two back-to-back photons and no other activity in the central detector, as the Pb ions escape into the LHC beam pipe. Last year we have discovered this phenomena with beyond 8σ signal significance (**ATLAS observes light scattering light**) and published in PRL **(Editor's Suggestion)**. We are using a data sample corresponding to an integrated luminosity of 2.2 nb^{-1} to measure fiducial cross-section and four differential distributions (invariant mass, rapidity, p_T, $|cos(\theta^*)|$) and set limits on the production of axion-like particles (ALP) using diphoton invariant mass distribution. This work has been presented at LHCP conference recently in May 2020 **(news)** and recently submitted to the **(JHEP)**.

- "Interface and validate SuperChic event generator with ATHENA framework for HI collisions" (ongoing): SuperChic is a Monte Carlo event generator for central exclusive production at parton level, for a range of Standard Model final states (including ALP production for BSM searches). We are interested in processes such as ($gg \to \gamma\gamma$), two–photon initiated muons and the production of photon pairs via $\gamma\gamma \to \gamma\gamma$ process (Light-by-Light scattering) which serves as a background and signal, respectively. In this project, my tasks are to validate the SuperChic code, implement SuperChic generator by interfacing to the ATHENA software release 21, validate truth information accessed via Athena with standalone output, compare with the Pb+Pb reconstructed data in MC, development of Rivet module to analyze the SuperChic truth information and compare to experimental data from ATLAS.

RESEARCH REVIEWS (ALICE & ATLAS)

- Served on ALICE and ATLAS collaboration assigned Analysis Review Committee and Editorial board (comprised of 2-3 experts) on five different research projects. My responsibilities included overseeing research work before their publication as well as improvement of analysis strategy and results. Those analyses are: "Measurements of Jet Azimuthal Anisotropies in Pb+Pb collisions at $\sqrt{s_{NN}} = 5.02$ TeV" , "J/ψ production as a function of charged-particle multiplicity in pp collisions at $\sqrt{s} = 13$ TeV at forward rapidity", "Bayesian unfolding of charged particle (p_T) spectra with ALICE at the LHC", "Upsilon (Υ(1S) and Υ(2S)) production as a function of charged particle multiplicity in pp collisions at $\sqrt{s} = 13$ TeV" and "J/ψ and ψ(2S) production as a function of charged particle multiplicity in pp collisions at $\sqrt{s} = 2.76$ TeV and $\sqrt{s} = 5.02$ TeV".

RESEARCH PROJECT (ALICE)

- During my three-year tenure as a post-doc at CCNU, I have led and contributed in several projects which are listed below, some projects are in last stages and some are in progress.

- "First measurement of Underlying Event (UE) activity in pp and pPb collision at $\sqrt{s_{NN}} = 5.02$ TeV" (was chair): This analysis is focused on observing charged-particle density and energy density in different topological regions, in particular, in the transverse region which is more sensitive to the Underlying Event and MPI. The chief objective of this project is to present the first results of UE activity in pPb and pp collision at 5.02 TeV and study the interplay between soft QCD effects and nuclear effects in such systems.

- "Study of strangeness production as a function of the charged-particle multiplicity in pp collisions at $\sqrt{s}$= 13 TeV" (published): This work describes the measurement of the strange particle production at mid-rapidity as a function of the charged particle multiplicity measured using forward and central multiplicity estimators in pp collisions at $\sqrt{s} = 13$ TeV. Differential transverse momentum spectra for strange hadrons, such as K^0_S, Λ, Ξ, and Ω are described in this work. In addition, the integrated yields and the average transverse momentum are evaluated by fitting differential transverse momentum-spectra and extrapolating them down to zero. Finally we compare the corresponding ALICE results at $\sqrt{s}$= 7 TeV pp collisions published in nature physics.

- "Energy and Multiplicity dependence of the pseudorapidity distribution of charged particles in pp collisions at $\sqrt{s}$= 5.02, 7, and 13 TeV" (final round): This measurement is done with both inclusively and for different multiplicity classes as defined by a forward and central multiplicity estimator. This study relies on the data collected by ALICE in the LHC RUN II using a minimum-bias trigger as well as high multiplicity triggers to reach much higher multiplicity class up to 0.001%. The shapes of pseudorapidity density distributions and average pseudorapidity density at very high multiplicity are sensitive to the MPI. In this work, we also explore the dependence of the KNO variable as a function of the center of mass energy where inclusive pseudorapidity distribution is used to normalize the multiplicity dependent pseudorapidity distribution.

- "The study of Double Parton Scattering (DPS) using J/ψ triggered in forward regions and associated high p_T tracklets in the central region with pp collision at $\sqrt{s} = 13$ TeV" (was chair): this study is in collaboration with Professor Diego Stocco (SUBATECH, France) which focuses on the DPS, which is a presence of two hard scattering interactions in a single event. In this measurement, we were studying the J/ψ candidates (decaying into di-muons) measured in the forward region and observing high p_T charged hadron candidates (Silicon Pixel Detector tracklets) in the central barrel. By studying the production cross-section of J/ψ and associated high p_T candidates, we can calculate the effective cross-section for the DPS signal using the famous pocket formula. One of the challenges of this project is to overcome the limitations of our ALICE detector acceptance. This work needs to exploit all the advantages of the forward and central barrel detectors.

- "Higher Moments of Underlying Event observables in pp collision at $\sqrt{s} = 13$ TeV" (as chair): This novel work focuses on the transverse region with respect to the leading track which is more sensitive to the underlying event activity. To better understand the UE properties, the fluctuations of the charged particle and its energy density distributions are investigated for higher moments, i.e. by studying the root mean square (RMS), skewness, and kurtosis of underlying event observables.

- "RIVET analysis plug-in for the study of multiplicity dependence of the pseudorapidity distribution of charged particles in pp collisions at $\sqrt{s}$= 13 TeV" (was chair): In this work, the RIVET analysis plug-in is built for the multiplicity dependence study of the pseudorapidity distribution of charged particles and to compare them with predictions from PYTHIA 8, PYTHIA 6, EPOS LHC, and

DIPSY MC generators for different physics tunes. One of the challenges in this project is to implement the multiplicity binning in pp collisions in RIVET and use it.

- "Pseudorapidity and transverse-momentum distributions of charged-particles in proton-proton collisions at $\sqrt{s}$= 13 TeV" (Published) : this work presented the first measurements of inclusive charged-particle production in proton-proton collisions at $\sqrt{s}$= 13 TeV with the ALICE detector at LHC using the run II data. I have contributed to the measurement of pseudorapidity density distribution using SPD tracklets.

RESEARCH PROJECT (SPIRIT)

- After my dissertation, I worked with the Symmetry Energy Project (SEP) collaboration at the National Superconducting Cyclotron Laboratory (NSCL). I led the development of SPiRITROOT software framework using the base packages provided by FairRoot. The SPiRITROOT is an object-oriented simulation, reconstruction, and data analysis software framework based on ROOT which also includes offline reconstruction of the events. My work contributed to the simulation, digitization, and reconstruction of the events inside the SAMURAI Pion-Reconstruction and Ion-Tracker (SPiRIT) Time Projection Chamber (TPC). My contribution to the Monte-Carlo (MC) simulation is to build TPC geometry using ROOT and integrate it with SPiRITROOT to transport events using GEANT3/GEANT4 model. I successfully implemented the magnetic field map of the SAMURAI magnet into TPC simulation as an alternative to using a constant magnetic field which improved tracking. I also studied digitization codes such as cluster formation, drifting of electrons, and avalanche process, which contributed towards the successful working of digitization. In addition, I have also studied Garfield (Magbolz) package for drifted electrons in gas mixtures under the influence of electric and magnetic fields to extract gas parameters such as drift velocity, attachment coefficient, and diffusion coefficients. I calculated the Pad Response Function (PRF) of the TPC using detector parameters and Gatti function. By studying the real events from ^{90}Sr beta source, I have analyzed pedestal subtracted data from the pad signals to study the charge pulse shape and fitted it to a convoluted Landau-Gaussian function which is used for resolution studies. I worked on the Riemann pattern recognition algorithm for track finding which estimates the helix parameters much faster than the conventional non-linear circle fit on the plane. I have determined the parameter selection cuts necessary for the successful and efficient working of the pattern recognition algorithm. In this project, I have also studied and implemented the GENFIT track fitting algorithm package into the SPiRITROOT framework.

RESEARCH PROJECT (CDF)

- My dissertation centered on the search for a heavy baryon resonance state, Λ_b^{*0}, in Collider Detector at Fermilab (CDF) collected data as predicted by SM. This work has been featured on the Fermi Today as the result of the week and on the Department of Physics and Astronomy UNM. During this period, we were credited to have found the first evidence of the bottom baryon resonance state. The two states interpreted as the Λ_b^{*0} resonant states were observed by the LHCb Collaboration. One of the major challenges of this analysis was to reconstruct the final Λ_b^{*0} state using two soft pions from the Λ_b^{*0} decay and the ground state Λ_b^0. The analysis is based on a 10 fb^{-1} data sample collected by using Two Displaced Tracks Trigger. Another challenge was to estimate systematic uncertainties on the mass determination associated with soft pions in the tracker system. The significance of the observed signal is 3.5σ and the mass of the observed state is found to be 5919.22 ± 0.76 MeV. The evidence of Λ_b^{*0} state along with its precise mass measurement confirm the validity of the quark model and test the applicability of various perturbative QCD models used to describe the interaction of heavy quarks.

- I collaborated with my University of New Mexico (UNM) ATLAS colleagues to study new particle tracking technologies using the Los Alamos Neutron Science Center (LANSCE) proton beam at the Los Alamos National Lab (LANL). We devised a method for real-time monitoring of charged

particle beam profile and fluence, corresponding to the operating conditions in upcoming LHC runs. This method predicts the radiation exposure to the devices under test by measuring the profile of the charged particle beam and fluence. We used this technique to test tracking detectors for the LHC upgrade era, which will operate in a radiation field produced by beam collisions. Our custom diode array system was placed in the path of the 800 MeV proton beam at the LANSCE facility of LANL irradiating silicon sensors to measure fluence and changing beam profile.

- I have also collaborated with Fermilab scientist Dr. Satyajit Behari for three years on a project entitled "A Large Inclusive B/Charm Physics Monte Carlo (MC) Sample Production". This CDF B-group sample was designed to be generic and serves various physics analyses that require a detailed understanding of the background composition. My main goals for this project were to identify, test, and compare the MC data produced with various Pythia event generation modes (MSEL =1 with and without underlying events and MSEL = 5) and choose an event generation scheme which is the closest representative of real data. By comparing various Pythia event generation modes, we chose the best possible setup, and then produced a set of pilot samples using our customized MC production setup, compared b-quark p_T, η, and ϕ distributions for various filter and trigger requirements with arbitrary normalization, and set benchmarks for sample production such as time for Ntuplizing the data, disk space usage etc. I presented this work at the Extreme Science and Engineering Discovery Environment (XSEDE 2013) conference in San Diego, and our CDF internal note on it has been distributed.

RESEARCH PROJECT (MINICLEAN)

- During my Master studies at UNM, I worked on the mini Cryogenic Low-Energy Astrophysics with Noble Liquids (miniCLEAN) dark matter experiment, which utilizes 500 kg of liquid Argon detector that is used to identify dark matter and neutrinos. I worked on calibration of photomultiplier tubes, implementation of the acrylic wavelength shifter, and the ultraviolet LED set up used in the optical cassette system. As a part of this project, the ultraviolet LED characteristics at room and liquid nitrogen temperature were measured, and setup was tested successfully at UNM and demonstrated at Los Alamos National Lab.

RESEARCH PROJECT (HIGH-THROUGHPUT COMPUTING)

- My work on the B/Charm Physics Monte Carlo sample project on CDF, developed my experience in distributed high throughput computing using the Fermilab grid. I attended the Open Science Grid user school in summer 2013 followed by the XSEDE14 workshop which helped me further to develop my understanding of high throughput and high-performance computing. This school was aimed at providing a foundation in distributed computing and hands-on training in grid computing techniques for advanced researchers. This program provided essential skills to conduct and support scientific analysis in the emerging Grid computing environments using HT-Condor software.

RESEARCH PROJECT (NANO-PHYSICS)

- Before joining UNM, my research work at Indian Institute of Technology (IIT), Guwahati, India focused on the growth of ZnO nanostructures and macro-structures. My research experience at IIT includes several synthesizing techniques for the ZnO nanostructures, the study of its growth structures, annealing effects, electrical and optical properties using many characterization techniques.

Teaching and Mentoring Experience

Teaching (AGH)

- I taught "Introduction to the Particle Physics Data Analysis" course to a undergraduate students at AGH university in Spring 2019, more details about the course and the syllabus could be found using this course link and also in teaching statement.

Tutor (CAPS)

- I worked as a physics and maths tutor at the Center for Academic Program Support (CAPS) in Fall 2011 and also for Co-Operative Education for a semester in Spring 2014. Tutoring experience at CAPS involved interacting with undergraduate students from different backgrounds, and delivering them the physics concepts in elementary form.

Teaching Assistant and Laboratory Instructor (UNM)

- At UNM, I taught four undergraduate physics laboratories, General Physics Lab I (Physics 160L), General Physics Lab III (Physics 262L), Physics Laboratory (Physics 102L), and Instrumental Analysis (CHEM 453L) during four different semester between Fall 2012 to Spring 2014. Besides, laboratory instructor, the teaching assistant duties at UNM focused on assisting graduate and undergraduate level courses (General Physics II (algebra based) in Spring 2011, Concepts of Astrophysics I and General Astronomy I in Fall 2010, Intro to Astronomy and Intro to Physics in Spring 2010, General Physics II (calculus based) and Introduction to Physics in Fall 2009, General Physics I (algebra based) and Intro to Modern Physics in Springs 2009, and Analytical Mechanics and Introduction to Modern Physics in Fall 2008) for over six semesters between Fall 2008 to Spring 2011. As a part of my duties, I delivered review lectures for an undergraduate astronomy course, assisted students with problem solving recitation sessions in classical mechanics courses, and prepared solutions for homework problems of some courses.

Workshops (CCNU)

- Series of lectures and hands on tutorials towards the master and PhD students training in July 2015, dedicated on "Introduction to PYTHIA and DIPSY MC Generators and their Validation as well as Tunning tool set RIVET".
- Lectures and tutorials delivered for master and PhD students training program in July-August 2016, on the topic "Multiplicity Dependence Study of Pseudorapidity Density Distribution".

Supervision in Research

- Pawel Drabczy (AGH University): "Measurement of trigger and electron reconstruction efficiencies using the Tag-and-Probe method in heavy-ion collisions in the ATLAS experiment at the LHC" (Bachelor's Thesis) 2018-2020
- Feng Fan (CCNU): "First Measurement of the Underlying Event Activity in Pbp and pPb Collisions at Centre-of-Mass Energy of 5.02 TeV Per Nucleon With ALICE" (Graduate Master's Thesis) 2016-2018
- Ahmed Mustafa Thabt: "Looking for DPS patterns using J/ψ and high p_T tracklets" (CERN-STUDENTS-Note-2017-133) Summer of 2017
- Zhen Xu: "Higher Moments of Underlying Event Distributions" (CERN-STUDENTS-Note-2017-033) Summer of 2017
- Xiaoyu Liu: "Measuring the pseudorapidity distribution of charged particles in proton-proton collisions at $\sqrt{s}$= 13 TeV with the ALICE Experiment at the LHC" (CERN-STUDENTS-Note-2016-110) Summer of 2016
- Antinea Guerguichon: "Comparison of observables in the central region for different tunes in a Pythia 8 simulation for the study of MPI at 13 TeV" (CERN-STUDENTS-Note-2015-047) Summer of 2015

- At AGH UST, I have supervised Pawel Drabczy and Patrycja Potepa undergraduate students. They worked on the project which focuses on the measurements of the efficiency to reconstruct and identify electrons using tag and probe method in p-Pb collisions at a centre-of-mass energy

per nucleon of 8.16 TeV. This study is a part of top quark production measurement in p-Pb collision.

- At CCNU, I have supervised Feng Fang (master completed) and Hiwa Ahmed (master), Xinglong Li, Ahsan Mehmood Khan (PhD students), and Haoran Zhao (undergrad). Master and PhD students worked on Underlying Event activity, high multiplicity final state studies, and MPI studies with the ALICE experiment where as undergrad students worked on Rivet and MC related projects.