

Nationality: Indian

Date of birth: 9 July 1979

AMARESH DATTA

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Research Keywords :

Experimental nuclear and particle physics; nucleon structure; light nuclei formation; cosmic ray physics; indirect dark matter detection.

Education :

University of Massachusetts, Amherst : Ph.D., Physics, 2005-2012.
Indian Institute of Technology, Bombay, : M.Sc. Physics, 2001-2003.
Jadavpur University, Kolkata : B.Sc. Physics, 1998-2001.

Research Positions :

May 2015 - present

Postdoctoral Research Fellow at University of Hawaii at Manoa.
PI : Dr. Philip von Doetinchem. Experiment : **AMS-02, NA61/SHINE**.
Responsibilities : study of light nuclei formation in interactions of cosmic ray and interstellar medium using collider data, flux measurement of light nuclei in cosmic rays, search for anti-nuclei in cosmic ray as signatures of dark matter annihilation.

Feb 2012 - April 2015

Postdoctoral Research Fellow at University of New Mexico.
PI : Dr. Douglas Fields. Experiment : **PHENIX**.
Responsibilities : study of nucleon helicity and transverse spin dependent distribution functions of nucleon structure, detector maintenance and development studies using polarized proton collision data.

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2006-2012

Graduate Research Assistant at UMass, Amherst.

Thesis Supervisor : Dr. David Kawall. Experiment : **PHENIX**.

Research Topic : study of hard scattering and nucleon spin structure using polarised proton collision data.

2004-2005

Graduate Research Assistant at UMass, Amherst.

PI : Dr. Guy Blaylock. Experiment : **VERITAS**.

Research Topic : installation of VERITAS prototype, software development for stereoscopic tracking of high energetic gamma rays using multiple signals from telescope array.

2002-2003

Masters degree student at IIT, Bombay.

Thesis Advisor : Dr. Ramadevi Pichai.

Thesis Topic : study of deSitter and anti deSitter space-time metrics and blackhole solutions therein.

2000-2001

Bachelors degree student at JU, Kolkata.

Project Advisor : Dr. J. K. Bhattacharya.

Research Topic : study of hydraulic jump using approximate solutions to Navier-Stokes equations.

Research Experience :

Data Analysis

- Measurement of deuteron and proton flux in the cosmic rays using data from the AMS-02 detectors.
- Study of antiproton background in antideuteron identification analysis and sensitivity estimation using data from the AMS-02 spectrometer.

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- Measurement of deuteron cross-section using proton-proton collision data recorded at the NA61/SHINE experiment.
- Measurement of double helicity asymmetry and cross-sections of J/Ψ particles via di-muon decay channel in polarized proton collision data from the PHENIX experiment.
- Study of single transverse spin asymmetry in Drell-Yan processes via di-muon channel in polarized proton collision data at the PHENIX experiment.
- Study of cross-section and double helicity asymmetry of inclusive charged hadrons in polarized proton collision data at the PHENIX experiment.

Simulations and Phenomenology :

- Study of the energy dependence of coalescence parameter in deuteron and antideuteron formation using experimental data and GEANT4 and EPOS-LHC event generators.
- Study of formation and propagation of antiheliums in the interactions of cosmic rays and interstellar medium using EPOS-LHC.
- Study of hard scattering processes in proton-proton collisions using PYTHIA-8 simulations.

Hardware and Other Experimental Operations :

- Material studies for Ring Imaging Cherenkov detector for future Electron Ion Collider.
- Maintenance and operational support of PHENIX muon trackers.
- Assembly and testing of PHENIX Vertex Detector.
- Maintenance and operations support of CONDOR batch-queue system for PHENIX experiment.

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Conferences, Workshops, Summer Schools :

- 2nd Cosmic Ray Antideuteron Workshop, UCLA, CA, USA, Mar 2019.
- AMS-02 Collaboration Meeting, CERN, Switzerland, Nov 2017.
- NA61/SHINE Collaboration Meeting, CERN, Switzerland, Sep 2017.
- NA61 Analysis/Software/Calibration Meeting, Kielce, Poland, Feb 2016.
- Forward sPHENIX Workshop, Santa Fe, NM, USA, Feb 2014.
- 9th PHENIX Spinfest School on QCD Physics, Albuquerque, NM, USA, 2012.
- 19th International Workshop on Deep-Inelastic Scattering and Related Subjects, Newport News, VA, Apr 2011.
- 18th International Symposium on Spin Physics, University of Virginia, Charlottesville, VA, USA, Oct 2008.
- 4th PHENIX Spinfest School on QCD Physics, BNL, NY, USA, Jun-Jul 2008.
- 3rd PHENIX Spinfest School on QCD Physics, RIKEN, Wako, Japan, Jun-Jul 2007.
- The New England Particle Physics Student Retreat, Craigsville, MA, USA, Aug 2004.

Presentations at Seminar, Colloquia and Conferences :

- *A Study of Astrophysical Backgrounds of Antihelium Nuclei in Cosmic Rays, $\bar{\mathbf{d}}$ 2019* at UCLA, CA, USA, Mar 2019.
- *Search for Antideuterons in Cosmic Ray Data from AMS-02 and Understanding Deuteron/Antideuteron Production Mechanism from NA61 data, Seminar, Wayne State University, 2017.*

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- *Search for Antideuterons in Cosmic Ray Data from AMS-02 and Understanding Deuteron/Antideuteron Production Mechanism from NA61 data*, **Seminar, University of Michigan**, 2017.
- *Probing Proton Spin Structure At PHENIX Experiment*, **Seminar, Punahou School**, 2016.
- *Longitudinal and Transverse Spin Structure of Polarized Protons : A PHENIX Perspective*, **Colloquium, University of Hawaii**, 2016.
- *Longitudinal and Transverse Spin Structure of Polarized Protons*, **Colloquium : Jadavpur University**, 2014.
- *Vernier Scan Technique for Absolute Luminosity Measurement at PHENIX*, **Seminar, University of New Mexico**, 2014.
- *Cross-section and Double Helicity Asymmetry of Inclusive Charged Hadrons from $p+p$ data at $\sqrt{s} = 62.4$ GeV at PHENIX*, **Seminar, University of New Mexico**, 2013.
- *Gluon Polarization From Spin Asymmetry Measurements At PHENIX*, **DIS 2011**, Newport News, VA, USA, 2011.
- *Double-longitudinal spin asymmetry in non-identified charged hadron production in $p+p$ collisions at $\sqrt{s} = 62.4$ GeV at PHENIX*, **SPIN 2008**, Charlottesville, VA, USA, 2008.

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References :

Dr. Philip von Doetinchem Dr. Christine Aidala

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Dr. David Kawall

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