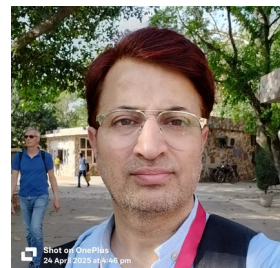# Brief Curriculum Vitae

Dr. Shabir Ahmad

Experimental High Energy Physicist

Contact Information

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- Address: Department of Physics, University of Kashmir, Kupwara Campus, Wayun 193222

Professional Summary

Assistant Professor at the University of Kashmir, Kupwara Campus with 15+ years of teaching experience. Experimental Physics Specialized in detector R&D (Muon Chambers, GEM), simulations (GEANT4, UrQMD), and data analysis for CBM-FAIR (GSI, Germany) and CERN-ALICE (Geneva, Switzerland**)** collaborations.

Education

- Ph.D. in Physics (2016) | University of Kashmir
  Thesis: *Dimuon Measurement by the CBM Experiment at FAIR Energies*
- M.Phil in High Energy Physics (2012)
- M.Sc (Physics) (2004) | B.Sc (2002)
- PGDCA (2005) | Specialization: C/C++, JAVA, DBMS, VB, ROOT, SL, SQL, GEANT3

Professional Experience

- Lecturer (Contractual) | University of Kashmir (2019–2024)
- Faculty (Temporary) | NIT Srinagar (2017–2018)
- JRF | University of Kashmir (2011–2015)
- Teaching Assistant | Colleges (2007-10, 2015-16)
- Lecturer | Hr. Sec. (2006-07)

Key Projects

- CBM-FAIR (Germany): Muon Chamber R&D, simulations (2010–present).
- CERN-ALICE (Geneva): Heavy-ion collision data analysis (2023–present).
- Developed RPC detector Module (VECC Kolkata, 2011).

Technical Skills

- Software: C++, ROOT, GEANT4, MATLAB, Python
- Systems: HPC (Prometheus/Kronos clusters), Linux, Grid Computing
- Detectors: MUCH, STS, GEM

Publications (Compact Format)

Journal Articles

- Collision energy dependence of elliptic flow of identified hadrons in heavy-ion collisions using the PHSD model, Phys. Lett. B 859 (2024)

- Elliptic flow of identified hadrons in Au+Au collisions at Elab = 35 A GeV using the PHSD model, Eur. Phys. J. C

- Elliptic flow of inclusive charged hadrons in Au+Au collisions at Elab = 35 A GeV using the PHSD model, J. Phys. G: Nucl. Part. Phys. 50 (2023) 125106 (10pp)

- Design and performance of a segmented-absorber based muon detection system for high energy heavy ion collision experiment, NIM A 775 (2015)

- Anisotropic Flow of Identified Hadrons by the Event Plane Method at FAIR Energies, Int. Jour. Fund. Phy. Sci., Vol 5, 12-17 (2015)

- Challenges in QCD matter physics --The scientific programme of the Compressed Baryonic Matter experiment at FAIR, The Eur. Phy. Jr. A, 53, 60 (2017)

- Astrophysics with heavy-ion beams, IOPscience: Physica Scripta, 96 (2021)

- Probing dense QCD matter in the laboratory—The CBM experiment at FAIR, OPscience: Physica Scripta, 95 (2020)

- Feasibility studies of conserved charge fluctuations in Au-Au collisions with CBM, Nucl. Phy. A 1005 (2021)

- The Compressed Baryonic Matter Experiment at FAIR, Nucl. Phy. A 1005 (2021),

- Measurement of rare probes with the Silicon Tracking System of the CBM experiment at FAIR, Nucl. Phy. A931, 1136-1140 (2014)

- Measurement of dileptons with the CBM experiment at FAIR, Nucl. Phy. A 931 (2014) 735–739

- The Compressed Baryonic Matter Experiment at FAIR. Nucl. Phys., A 904-905, 941c-944c (2013)

- Physics of Compressed baryonic matter, J. Phys. Conf. Ser. 420, 012016 (2013)

- The technological concept of the Compressed Baryonic Matter (CBM) experiment Jr. of Phy.: Conf. Ser. 426 (2013) 012020

- Fluctuation Evolution in Heavy Ion Collisions at FAIR energy, PoS Vol 242, PoS(ICPAQGP2015)111

- Multi-Strange production at FAIR energies, PoS Vol 242, PoS(ICPAQGP2015)051

- Overview of the Silicon Tracking System for the CBM experiment, *J. Phys.: Conf. Ser.* 599, 01(2025)

- Technical Design Report: Silicon Tracking System (STS) , GSI Germany Report 2013-14

- Propagation of Fluctuations in Au+Au Collisions at FAIR energy, arXiv:1408.5107 [hep-ph], ISSN: 2331-8422

Book Chapters and Conference Papers

- Production of $\Omega-$, $\Xi-$ and $\Lambda 0$ at FAIR energies, CBM Progress Report 2020, page 188, GSI, Darmstadt, Germany

- Energy dependence of φ meson yield at FAIR energies, CBM Progress Report 2020, page 187, GSI, Darmstadt, Germany

- Reconstruction of low mass vector mesons by MUCH at 8 AGeV energy, CBM Progress Report 2020, page 92, GSI, Darmstadt, Germany

- Status of the Compressed Baryonic Matter (CBM) experiment at FAIR, CBM Progress Report 2016, page 1, GSI, Darmstadt, Germany

- Net-proton fluctuation evolution at FAIR energy, CBM Progress Report 2016, page 186, GSI, Darmstadt, Germany

- Status of the Compressed Baryonic Matter experiment at FAIR, CBM Progress Report 2015, page 1, GSI, Darmstadt, Germany

- Simulation of the beam pipe for MUCH, CBM Progress Report 2015, page 69, GSI, Darmstadt, Germany

- Mass and Quark number dependence of elliptic flow with the AMPT model at FAIR Energies, CBM Progress Report 2015, page 143, GSI, Darmstadt, Germany

- The CBM experiment in the international context, CBM Progress Report 2014, page 5, GSI, Darmstadt, Germany

- The Compressed Baryonic Matter Experiment at FAIR, CBM Progress Report 2014, page 1, GSI, Darmstadt, Germany

- Simulation of beam-pipe shielding for CBM-MUCH, CBM Progress Report 2014, page 70, GSI, Darmstadt, Germany

- Evolution of strangeness fluctuations at FAIR energies, CBM Progress Report 2014, page 146, GSI, Darmstadt, Germany

- Status of the Compressed Baryonic Matter (CBM) experiment at FAIR, CBM Progress Report 2013, page 1, GSI, Darmstadt, Germany

- Identification of dimuons from low-mass vector mesons with CBM at SIS-300 , CBM Progress Report 2013, page 114, GSI, Darmstadt, Germany

- Efficiency of the CBM Muon Chamber system for low-mass vector mesons , CBM Progress Report 2013, page 115, GSI, Darmstadt, Germany

- Status of the CBM Experiment at FAIR, CBM Progress Report 2012, page 1, GSI, Darmstadt, Germany

- Study of secondaries produced in the MUCH detector of the CBM Experiment, CBM Progress Report 2012, page 45, GSI, Darmstadt, Germany

- Technical Design Report: Muon Chamber (MUCH) , GSI Report 2014-15, GSI-2015-02580

- Technical Design Report for the CBM Projectile Spectator Detector (PSD), , GSI Report 2015, GSI-2015-02020

- Production of multi-strange hyperons at FAIR energies, Production of multi-strange hyperons at FAIR energies, Pro. of DAE Sym. on Nuc. Phy. 65 (2021) , page 684

- φ meson yield using PHSD model at FAIR energies Pro. of DAE Sym. on Nuc. Phy. 65 (2021) , page 686

- Performance study of MUCH detector for low mass vector mesons at 8 A GeV, Pro. of DAE Sym. on Nuc. Phy. 65 (2021) , page 736

- Elliptic and Triangular flow studies of φ meson in Nucleus-Nucleus Collisions at Elab 10AGeV and 30AGeV, Pro. of DAE Sym. on Nuc. Phy. 65 (2021) , page 746

- STS Effects and MUCH Effeciency of CBM Experiment, Pro. of DAE Sym. on Nuc. Phy. 59 (2014) , page

- Optimisation of Beam-Pipe Shielding for MUCH detector of CBM experiment, Pro. of DAE Sym. on Nuc. Phy. 59 (2014) , page 756

- Cocktail detection with CBM Experiment at 25 GeV, Pro. of DAE Sym. on Nuc. Phy. 59 (2014) , page 686

- Net-Proton Evolution in Heavy Ion Collisions, Pro. of the DAE Symp. on Nucl. Phys. 60, 740 (2015)

- Optimisation of Selection Cuts for MUCH detector of CBM experiment, Pro. of the DAE Symp. on Nucl. Phys. 60, 912 (2015)

- Performance Study of MUCH beam-pipe and Shielding for CBM experiment, Proc. of the DAE Symp. on Nucl. Phys. 60, 806 (2015)

- MUCH beam-pipe for CBM experiment, Proc. of the DAE Symp. on Nucl. Phys. 60, 1026 (2015)

- Study of the elliptic flow and their energy dependence over pseudorapidity rang at FAIR energies, Proc. of the DAE Symp. on Nucl. Phys. 60, 732 (2015)

- Secondaries upstream and downstream the first absorber of muon detection system for CBM Experiment at FAIR, Proc. of the DAE Symp. on Nucl. Phys. 58, p. 964 (2013)

- Segmentation Optimization for dimuon detection system in CBM Experiment at FAIR, Proc. of the DAE Symp. on Nucl. Phys. 58, p. 748 (2013)

- φ meson yield using PHSD model at FAIR energies Pro. of DAE Sym. on Nuc. Phy. 65 (2021) , page 686

- Performance study of MUCH detector for low mass vector mesons at 8 A GeV, Pro. of DAE Sym. on Nuc. Phy. 65 (2021) , page 736

- Elliptic and Triangular flow studies of φ meson in Nucleus-Nucleus Collisions at Elab 10AGeV and 30AGeV, Pro. of DAE Sym. on Nuc. Phy. 65 (2021) , page 746

- STS Effects and MUCH Effeciency of CBM Experiment, Pro. of DAE Sym. on Nuc. Phy. 59 (2014) , page

- Optimisation of Beam-Pipe Shielding for MUCH detector of CBM experiment, Pro. of DAE Sym. on Nuc. Phy. 59 (2014) , page 756

- Cocktail detection with CBM Experiment at 25 GeV, Pro. of DAE Sym. on Nuc. Phy. 59 (2014) , page 686

- Net-Proton Evolution in Heavy Ion Collisions, Proc. of the DAE Symp. on Nucl. Phys. 60, 740 (2015)

- Optimisation of Selection Cuts for MUCH detector of CBM experiment, Proc. of the DAE Symp. on Nucl. Phys. 60, 912

- Performance Study of MUCH beam-pipe and Shielding for CBM experiment, Proc. of the DAE Symp. on Nucl. Phys. 60, 806 (2015)

- MUCH beam-pipe for CBM experiment, Proc. of the DAE Symp. on Nucl. Phys. 60, 1026 (2015)

- Study of the elliptic flow and their energy dependence over pseudorapidity rang at FAIR energies, Proc. of the DAE Symp. on Nucl. Phys. 60, 732 (2015)

- Secondaries upstream and downstream the first absorber of muon detection system for CBM Experiment at FAIR, Proc. of the DAE Symp. on Nucl. Phys. 58, p. 964 (2013)

- Segmentation Optimization for dimuon detection system in CBM Experiment at FAIR, Proc. of the DAE Symp. on Nucl. Phys. 58, p. 748 (2013)

Conferences, Workshops, & Schools Attended

- *INDIAN-CBM Collaboration Meeting – 2010*

- CBM–STAR–ALICE Collaboration Meeting – 2011
- Inspire Programme – 2011
- 7th Indian FAIR–CBM Meeting – 2012
- QGP Meet – 2012
- 8th JK Science Congress – 2012
- 20th FAIR–CBM Collaboration Meeting – 2012
- CBM Software Workshop – 2012
- SERC School (High Energy Physics) – 2011
- NuMEC DST–SERC School – 2013
- FAIR Computing Workshop (CAPSS) – 2013
- NVIDIA CUDA & OpenACC Training – 2013
- Int. Conf. on Matter at Extreme Conditions – 2014
- 3rd FAIR Physics Workshop – 2014
- Education Conference – 2009
- GEANT4 Mini School – 2014
- DAE-BRNS Heavy Flavour Meet – 2016

- ASI Annual Meeting – 2016
- Refresher Course in Experimental Physics – 2016
- 7th Quark Gluon Plasma Conference – 2015
- CNT QGP Meet – 2015
- CBM Collaboration Meeting – 2015
- Computational Workshop (KU) – 2016
- Workshop on Graph & Geometric Algorithms – 2015
- CNT Workshop on Quarkonia – 2017
- CBM theme meeting (2023)
- Theme Meeting on FAIR-Science 2025

Awards & Affiliations

- Collaborator: CBM@FAIR Germany, ALICE@CERN Geneva.
- JRF Scholarship (2012–2013).

  - **60+ talks at international forums (VECC, SINP, TIFR, GU, KU, BOSE Institute Main Campus & Dajeeling, Calculate Univ., FAIR GSI Germany etc..)**