CURRICULUM VITÆ

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3. **Personal data :**
Nationality : Indian
Date of birth : 22/02/1974
Sex : Male
Marital Status : Married

4. **Education :**

- **Present position :**
Doctoral student in VECC, Kolkata under supervision of Dr. Y.P. Viyogi.

- **M. Sc.** (1998)
Special paper - Electronics.
Second class, 59.4%
University of Calcutta, Kolkata, India

- **B. Sc.**(Physics Hons.) (1995)
First class, 60% (Hons.)
University of Calcutta, Kolkata, India

5. Research Experience :

As a doctoral student I worked with the experimental physics division at my home institute which is involved in the STAR and ALICE experiments at RHIC and LHC respectively. The responsibility of this group was to build the Photon Multiplicity Detector (PMD) for both the experiments.

My experience include the fabrication and testing of the PMD, the design and development of the slow control and offline reconstruction software for the detector and the analysis of the data taken by the detector. I also have experience in analysis of the other data from the STAR experiment at RHIC.

My activities during the doctoral research period include the following:

1. **Fabrication and Testing of STAR Photon Multiplicity Detector** - I was involved in every step of the fabrication and testing of all components of PMD, which is a preshower detector. In brief this detector consists of two planes of tiny gas based proportional counters of hexagonal shape, arranged in the shape of honeycombs. There is a 3 radiation length thick lead plane sandwiched between these two detector planes which acts as the converter. The principle of the detector is when a high energy charged particle falls on the detector, it gives signal on the first plane, passes through the converter and gives signal on the second plane, whereas if a photon falls, it does not give signal on the first plane but while passing through the lead plane produces electromagnetic shower and gives signal on the second plane. From the preshower signal on the second plane the photons are reconstructed, the number of photons are counted and there spatial distribution is determined. The information from the first plane of the detector is used to veto the charged particles. The components of the detector are the honeycombs, the unit module (UM), the supermodule (SM) *etc.* The jobs related include the fabrication, cleaning and quality assurance of the honeycombs, cleaning and QA of the PCBs, wire insertion of the chambers, resistance measurement for each cell, fabrication of the SM, bonding of the UMs into the SMs etc. I took active part in the rigorous testing of these components and the detector as a whole.

2. **Design and development of the Front End Electronics for the STAR PMD** - I spent a substantial period in our electronics lab working with the design of the several Front End Electronics boards namely the Translator, Buffer and the Gas-4 boards which are needed to read out of data from the detector. This includes a thorough testing of each of the 10,000 Gassiplex chips for their functionality. We developed a new control unit which generates the control signals required for the operation of the chips. This unit is used even for any offline testing of the chips or the FEE boards.

3. **Testing of PMD prototype at test beams at CERN** - I was an active member of crew involved in several testing of the STAR PMD prototype using the high energy pion and electron beam facilities at CERN in 2001. These experiments include the variation of detection efficiency of the detector with the bias voltage and with different mixtures of active gas, response of the detector for charged particles and photons etc.

4. **Installation, Integration and Commissioning of PMD in STAR** - I was involved in the integration and commissioning of the PMD at STAR. This include another round of testing and installation of the different components of the detector at the experimental site at BNL, fine tuning of the parameters of the detector, integration of the detector with the trigger and DAQ system of the STAR experiment and analysis of the first set of data to ensure the baseline performance of the detector.

5. **Operation and data taking at STAR experiment** - I have the experience of being present at the STAR control room as a run time system operator, detector operator and shift crew during several occasions in 2001 and 2002 runs. As an occupant of these positions I had to operate different detector subsystems at STAR, look after the control parameters, take care of the gas flow *etc.* in different detectors.

6. **Design and development of the Slow Control System for the STAR PMD**- I was responsible for the design and development of the Slow Control system for the STAR PMD. This is needed to be controlled remotely several parameters of the detector when it runs. This system is based on the Experimental Physics and Industrial Control System (EPICS) used by the accelerators, large experiments in particle physics and high energy nuclear physics all over the world. This job involves working experience with remote control of **HV, LV** and **VME crates, VME controllers**, real time operating systems like **VxWorks** *etc.*

7. **Development of the offline reconstruction software for PMD** - I was a part of the team involved in the development of the offline reconstruction software for PMD. My contribution to this include various aspects of the software like reading the raw data and decoding it, design and implementation of MuDST for PMD, offline analysis framework *etc.*

8. **Analysis of PMD data Au+Au collisions at $\sqrt{s}$=200 GeV at RHIC** - PMD has taken data in the Run IV of RHIC. At present I am involved in the analysis of the data. PMD being a preshower photon multiplicity detector in the forward rapidity region, combining the data from other detectors at STAR experiment, is expected to provide important information on the photon production, spatial distribution of the photons, azimuthal anisotropy and flow, signals of possible chiral symmetry restoration *etc.*. This include the cleaning up of the raw data, checking the preliminary QA plots and reconstruction of the data to get physics results.

9. **Analysis of the data taken at Au+Au collisions at RHIC to study event by event fluctuation** - I am also involved in the study of event by event fluctuation at RHIC energies. In last several years the ebye fluctuations analysis has gained importance as it gives a signal of the phase transition expected to happen in the nucleus nucleus collisions at these energies. I am analyzing the data taken at Au+Au collisions at $\sqrt{s}$=200 GeV at RHIC. This analysis include the identification of the charged primary tracks based on the relative energy deposition in the Time Projection Chamber (TPC) at STAR to get the number of kaons and pions in a particular event and obtain the event by event fluctuation of the kaon to pion ratio, which may give important insight to the possibility of a phase transition in the collisions if studied for different collision centralities and different center of mass energies of the system.

6. Computational Experience:

- **C++ :** Experience of working in STAR computational framework involving object oriented programming in C++.
- **GEANT :** Experience of working with Geometry ANd Tracking (GEANT) which is a software package developed at CERN to simulate, study and optimize the geometry of a detector, different physics processes involved during the passage of particles through the detector and tracking of those particles. This involves optimization of the design parameters of the Photon Multiplicity Detector and study the performance of the detector using event generators.
- **ROOT, ALIROOT, ROOT4STAR :** Experience of working in ROOT which is an advanced analysis and plotting software developed at CERN and used for the data analysis in the current days particle physics and high energy nuclear physics experiments all over the world. I've worked with the specialized versions of ROOT for ALICE and STAR experiments.

As the part of my training I worked on the software simulations using ALIROOT and GSTAR (GEANT for STAR) for ALICE PMD and STAR PMD respectively. For STAR PMD (in standalone mode), I worked on the implementation of the PMD geometry in the STAR environment and on the analyses, such as the detector occupancy, effect of upstream material from other detectors, and finally the estimation of efficiency and purity of photon sample. I also worked with the ALIROOT package to do similar kind of simulation for the ALICE PMD, to study the effect of single particles like pion, muon, photon on the detector.

7. Publications in International Scientific Journal:

1. **The STAR Photon Multiplicity Detector** - M.M. Aggarwal *et al.*, **Nucl. Instrum. Meth. A499:751-761**,2003
2. **Multiplicity and Pseudorapidity Distributions of Photons in Au+Au Collisions at $\sqrt{s}_{NN}$ = 62.4 GeV** - By STAR Collaboration (J. Adams *et al.*) Jan 2005
   Submitted to Phys. Rev. Lett.
   e-Print Archive: nucl-ex/**0402008**
3. **K(892)* Resonance Production in Au+Au and p+p Collisions at $\sqrt{s}_{NN}$ = 200 GeV at STAR** - By STAR Collaboration (J. Adams *et al.*) Dec 2004.
   Submitted to Phys.Rev.C
   e-Print Archive: nucl-ex/**0412019**
4. **Pion Interferrometry in Au+Au Collisions at $\sqrt{s}_{NN}$ = 200 GeV** - By STAR Collaboration (J. Adams *et al.*). Nov 2004.
   Submitted to Phys.Rev.C
   e-Print Archive: nucl-ex/**0411036**

5. **Minijet Deformation and Charge-independent-two-particle Correlations on momentum subspace (η, ϕ) in Au+Au Collisions at $\sqrt{s}_{NN}$ = 130 GeV** - By STAR Collaboration (J. Adams *et al.*). Nov 2004
e-Print Archive: nucl-ex/**0411003**

6. **Azimuthal Anisotropy in Au+Au Collisions at $\sqrt{s}_{NN}$ = 200 GeV** - By STAR Collaboration (J. Adams *et al.*). Aug 2004
e-Print Archive: nucl-ex/**0408012**

7. **Azimuthal Anisotropy and Collisions at Large Transverse Momenta in p+p and Au+Au Collisions at $\sqrt{s}_{NN}$ = 200 GeV** - By STAR Collaboration (J. Adams et al.). Jul 2004
Published in **Phys.Rev.Lett.93:252301**,2004
e-Print Archive: nucl-ex/**0407007**

8. **Open Charm Yields in d + Au Collisions at $\sqrt{s}_{NN}$ = 200 GeV** - By STAR Collaboration (J. Adams *et al.*). Jul 2004
e-Print Archive: nucl-ex/**0407006**

9. **Transverse-momentum Dependent Modification of Dynamic Texture in Central Au+Au Collisions at $\sqrt{s}_{NN}$ = 200 GeV** - By STAR Collaboration (J. Adams *et al.*). Jul 2004
Submitted to Phys.Rev.Lett
e-Print Archive: nucl-ex/**0407001**

10. **Hadronization Geometry and Charge-Dependent number Autocorrelation on Axial Momentum Space in Au+Au Collisions at $\sqrt{s}_{NN}$ = 130 GeV** - By STAR Collaboration (J. Adams *et al.*). Jun 2004
e-Print Archive: nucl-ex/**0406035**

11. **Φ Meson Production in Au+Au and p+p Collisions at $\sqrt{s}_{NN}$ = 200 GeV** -By STAR Collaboration (J. Adams *et al.*). Jun 2004
e-Print Archive: nucl-ex/**0406003**

12. **Centrality and Pseudorapidity Dependence of Charged Hadron Production at Intermediate P_T in Au+Au Collisions at $\sqrt{s}_{NN}$ = 130 GeV** - By STAR Collaboration (J. Adams *et al.*). Apr 2004
Published in **Phys.Rev.C70:044901**,2004
e-Print Archive: nucl-ex/**0404020**

13. **Production of e^+e^- Pairs Accompanied by Nuclear Dissociation in Ultra-Peripheral Heavy Ion Collision** - By STAR Collaboration (J. Adams *et al.*). Apr 2004
Published in **Phys.Rev.C70:031902**,2004
e-Print Archive: nucl-ex/**0404012**

14. **Photon and Neutral Pion Production in Au+Au Collisions at $\sqrt{s}_{NN}$ = 130 GeV** - By STAR Collaboration (J. Adams *et al.*). Jan 2004
Published in **Phys.Rev.C70:044902**,2004 e-Print Archive: nucl-ex/**0401008**

15. **Azimuthally Sensitive HBT in Au+Au Collisions at $\sqrt{s}_{NN}$ = 200 GeV** - By STAR Collaboration (J. Adams *et al.*). Dec 2003
Published in **Phys.Rev.Lett.93:012301**,2004
e-Print Archive: nucl-ex/**0312009**

16. **Production of Charged Pions and Hadrons in Au+Au Collisions at $\sqrt{s}_{NN}$ = 130 GeV** - By STAR Collaboration (J. Adams *et al.*). Nov 2003
e-Print Archive: nucl-ex/**0311017**

17. **Cross-sections and Transverse Single Spin Asymmetries in Forward Neutral Pion Production from Proton Collisions at $\sqrt{s}_{NN}$ = 200 GeV** - By STAR Collaboration (J. Adams *et al.*). Oct 2003
Published in **Phys.Rev.Lett.92:171801**,2004
e-Print Archive: hep-ex/**0310058**

18. **Azimuthal Anisotropy at RHIC: The First and Fourth Harmonics** - By STAR Collaboration (J. Adams *et al.*). Oct 2003
Published in **Phys.Rev.Lett.92:062301**,2004
e-Print Archive: nucl-ex/**0310029**

19. **Identified Particle Distributions in pp and Au+Au Collisions at $\sqrt{s}_{NN}$ = 200 GeV** - By STAR Collaboration (J. Adams*et al.*). Oct 2003
Published in **Phys.Rev.Lett.92:112301**,2004
e-Print Archive: nucl-ex/**0310004**

20. **Pion, Kaon, Proton and Anti-proton Transverse Momentum Distribution from p+p and d + Au Collisions at $\sqrt{s}_{NN}$ = 200 GeV** - By STAR Collaboration (J. Adams *et al.*). Sep 2003
e-Print Archive: nucl-ex/**0309012**

21. **Event by event $< P(T) >$ Fluctuations in Au+Au Collisions at $\sqrt{s}_{NN}$ = 130 GeV** - By STAR Collaboration (J. Adams *et al.*). Aug 2003
Submitted to Phys.Rev.Lett.
e-Print Archive: nucl-ex/**0308033**

22. **Pion Kaon Correlations in Au+Au Collisions at $\sqrt{s}_{NN}$ = 130 GeV** - By STAR Collaboration (J. Adams *et al.*). Jul 2003
Published in **Phys.Rev.Lett.91:262302**,2003
e-Print Archive: nucl-ex/**0307025**

23. **Multistrange Baryon Production in Au+Au Collisions at $\sqrt{s}_{NN}$ = 130 GeV** - By STAR Collaboration (J. Adams *et al.*). Jul 2003
Published in **Phys.Rev.Lett.92:182301**,2004
e-Print Archive: nucl-ex/**0307024**

24. ρ^0 **Production and Possible Modification in Au+Au and p+p Collisions at $\sqrt{s}_{NN}$ = 200 GeV** - By STAR Collaboration (J. Adams *et al.*). Jul 2003
Published in **Phys.Rev.Lett.92:092301**,2004 e-Print Archive: nucl-ex/**0307023**

25. **Multiplicity Fluctuations in Au+Au Collisions at $\sqrt{s}_{NN}$ = 130 GeV** - By STAR Collaboration (J. Adams *et al.*). Jul 2003
Published in **Phys.Rev.C68:044905**,2003
e-Print Archive: nucl-ex/**0307007**

26. **Rapidity and Centrality Dependence of Proton and Anti-Proton Production from Au-197 + Au-197 Collisions at $\sqrt{s}_{NN}$ = 130 GeV** - By STAR Collaboration (J. Adams *et al.*). Jun 2003
Published in **Phys.Rev.C70:041901**,2004
e-Print Archive: nucl-ex/**0306029**

8. Publications in Conferences and Symposia (Reports and Abstracts) :

Presentations in International Conferences, Symposia etc.

1. **A technique to measure the tension of short wires in gas detectors** - **Supriya Das**, R.N. Singaraju and M.S. Ganti
Proceedings of International Symposium on Nuclear Physics, Mumbai, India Vol **43B** 2000 (488).

2. **A new control unit for testing the front end electronics chips for STAR and ALICE PMD** - R.N. Singaraju, **Supriya Das**, P. Bhaskar, M.S.Ganti, M.D. Trivedi and Y.P. Viyogi for the ALICE Collaboration
Proceedings of International Symposium on Nuclear Physics, Mumbai, India Vol **43B** 2000 (502).

3. **Photon Multiplicity Detector for ALICE experiment at CERN** - M.M. Aggarwal *et al.*
Proceedings of International Symposium on Nuclear Physics, Mumbai, India Vol **43B** 2000 (498).

4. **A cellular honeycomb proportional counter design for ALICE Photon Multiplicity Detector** - M.M. Aggarwal *et al.*
Fifteenth International Conference on Ultra-Relativistic Nucleus-Nucleus Collisions (QM 2001), SUNY, Stony Brook, USA, 2001.

5. **A Photon Multiplicity Detector for STAR Experiment at RHIC** - M.M.Aggarwal *et al.*
Book of Abstracts of Fourth International Conference on Physics and Astrophysics of Quark Gluon Plasma (ICPAQGP-2001), Jaipur, India, 2001.

6. **A Photon Multiplicity Detector for ALICE Experiment at LHC** - M.M.Aggarwal *et al.*
Book of Abstracts of Fourth International Conference on Physics and Astrophysics of Quark Gluon Plasma (ICPAQGP-2001), Jaipur, India, 2001.

7. **The STAR Photon Multiplicity Detector** - M.M. Aggarwal *et al.*
   Seventeenth International Conference on Ultra-Relativistic Nucleus-Nucleus Collisions (QM 2004), Oakland, USA, 2004.

8. **Systematic study of particle spetra from ultrarelativistic heavy ion collisions - Supriya Das** and Subhasis Chattopadhyay
   Fifth International Confrence on Physics and Astrophysics of Quark Gluon Plasma (ICPAQGP-2005), Kolkata, India, 2005.

9. **Physics with ALICE Photon Multiplicity Detector** - M.M. Aggarwal *et al.*
   Fifth International Conference on Physics and Astrophysics of Quark Gluon Plasma (ICPAQGP-2005), Kolkata, India, 2005.

Presentations in National Conferences, Symposia etc.

1. **Prototype tests of Honeycomb chamber with new granularity for ALICE PMD** - M.M. Aggarwal *et al.*
   Proceedings of DAE-BRNS Symposium on Nuclear Physics, Kolkata Vol **44B** 2001 (414).

2. **Design and fabrication of readout board for the STAR Photon Multiplicity Detector** - S. Ram Narayan, P. Bhaskar, **Supriya Das**, M.D. Trivedi, S. Mahajan and Y.P. Viyogi
   Proceedings of DAE-BRNS Symposium on Nuclear Physics, Tirunelvelli Vol **45B** 2002 (478).

3. **The STAR Photon Multiplicity Detector** - M.M. Aggarwal *et al.*
   Proceedings of DAE-BRNS Symposium on Nuclear Physics, Tirunelvelli Vol **45B** 2002 (426).

4. **Integration of Photon Multiplicity Detector in STAR experiment at RHIC** - M.M. Aggarwal *et al.*
   Proceedings of DAE-BRNS Symposium on Nuclear Physics, Mumbai Vol **46B** 2003 (486).

5. **Testing of Photon Multiplicity Detector for STAR experiment** - Debasish Das *et al.*
   Proceedings of DAE-BRNS Symposium on Nuclear Physics, Mumbai Vol **46B** 2003 (520).

6. **First results from Photon Multiplicity Detector at RHIC Au-Au collisions at $\sqrt{s} = 62.4$ GeV** - M.M. Aggarwal *et al.*
   Proceedings of DAE-BRNS Symposium on Nuclear Physics, Banaras Vol **47B** 2004 (388).

7. **Event by event fluctuation in kaon to pion ratio at relativistic heavy ion collisions - Supriya Das**, Zubayer Ahammed, Subhasis Chattopadhyay and Y.P Viyogi
   Proceedings of DAE-BRNS Symposium on Nuclear Physics, Mumbai Vol **46B** 2003 (364).

8. **Systematic study of particle spetra from ultrarelativistic heavy ion collisions - Supriya Das** and Subhasis Chattopadhyay
Proceedings of DAE-BRNS Symposium on Nuclear Physics, Banaras Vol **47B** 2004 (432).

Proposals, Internal Notes etc.

1. **Photon Multiplicity Detector**(for STAR Experiment), Revised Technical Proposal - M.M. Aggarwal *et al.*
VECC/EQG/01-01, 2001

2. **ALICE: Addendum to the Technical Design Report of Photon Multiplicity Detector (PMD)** By ALICE Collaboration
CERN-LHCC-2003-038, Sep 2003

9. Conferences and Workshops attended :

1. **International Symposium on Nuclear Physics** at BARC, Mumbai in December 2000.

2. **ALICE Week** at INSA, New Delhi in November 2001.

3. **Fourth International Conference on Physics and Astrophysics of Quark Gluon Plasma (ICPAQGP - 2001)** at Jaipur in December 2001.

4. **Fifth International Conference on Physics and Astrophysics of Quark Gluon Plasma (ICPAQGP - 2005)** at Kolkata in February 2005.

Attended the annual DAE-BRNS symposia in Nuclear and High Energy Physics, PMD group collaboration meetings and STAR collaboration meetings in the country and abroad regularly.

10. Seminars and Talks :

1. **Photon Multiplicity Detector - Results from simulation** - Talk delivered at VECC Physics group seminar, March 2001.

2. **Photon Multiplicity Detector** - Talk delivered in the Juniors' Day of STAR Collaboration meeting at BNL, February 2003.

3. **Preliminary results from Photon Multiplicity Detector at RHIC** - Talk delivered at the VECC Physics Group seminar, July 2004.

4. **Event by event fluctuation in kaon to pion ratio at relativistic heavy ion collisions - Supriya Das** for STAR Collaboration
Proceedings of DAE-BRNS Symposium on Nuclear Physics, Banaras Vol **47B** 2004 (402).

5. **Event by event fluctuation in kaon to pion ratio at Au+Au collisions at $\sqrt{s} = 200$ GeV - Supriya Das** for STAR Collaboration
Book of Abstracts XVI DAE-BRNS Symposium on High Energy Physics, Kolkata Vol **47B** 2004 (61).

6. **Event by event fluctuation in kaon to pion ratio at Au+Au collisions at $\sqrt{s}$ = 200 GeV - Supriya Das** for STAR Collaboration
   To be appeared in the proceedings of ICPAQGP-2005, Kolkata India.

Delivered several other talks in VECC Physics group seminars, regular PMD Group collaboration Meetings and STAR collaboration meetings.