

Gitanjali Poddar

Employment

2023 - present: Postdoctoral Research Assistant, Queen Mary University of London (QMUL), UK

Education

2020 - 2023: PhD Physics, Laboratoire d'Annecy de Physique des Particules (LAPP), France

2017 - 2019: MSc Physics, ETH Zurich, Switzerland

2013 - 2017: BSc Physics (First Class Honours), The University of Edinburgh, UK

Research Experience

2023 - present: Postdoctoral Research Assistant, QMUL

- Measuring the weak mixing angle with ATLAS and contributing to its global combination
- Developing a monitoring framework for the ATLAS Level-1 Calorimeter Trigger (L1Calo)
- Leading a simultaneous EFT+PDF fit using ATLAS high-mass W data
- Contributing to a combined EFT interpretation of quartic gauge couplings in ATLAS

2020 - 2023: PhD Thesis, LAPP/CNRS

- Measured cross-sections of the $Z\gamma$ scattering process with ATLAS
- Tested calibration board prototypes of the ATLAS Liquid Argon Calorimeter for the HL-LHC

2019: Research Intern, ETH Zurich

Developed strategies for mitigating pileup (unwanted collisions) at the CMS High Level Trigger

2018 - 2019: MSc Thesis, ETH Zurich

Modelled the CMS detector response to di-Higgs production using a boosted decision tree

2018: Semester Project, ETH Zurich

Tested scintillation crystals for developing PET (Positron Emission Tomography) detectors

Leadership and Service

2024 - present: ATLAS UK SM+B-Physics Convenor

Fostering collaboration among all 15 ATLAS UK institutes, reviewing student presentations for national meetings, and organising ATLAS UK workshops

2024 - present: Peer Reviewer for Physics Letters B, Elsevier

2024 - present: ATLAS Editorial Board Member

- Reviewed an ATLAS analysis on W^\pm cross-sections using low pileup data
- Reviewing an ATLAS analysis on $W\gamma$ cross-sections

2024: Organiser, ATLAS UK L1Calo Upgrade Meeting, QMUL

Hosted and coordinated a national meeting to discuss L1Calo upgrade progress and plans

2022 - present: ATLAS Analysis Contact

- Led the ATLAS $Z\gamma$ scattering analysis and chaired team meetings
- Leading the ATLAS weak mixing angle analysis and chairing team meetings

2022 - present: ATLAS Shifter, CERN

Ensuring proper operation of the ATLAS calorimeters, triggers and run-control during shifts in the control room

Teaching and Mentorship

2025: Tutor, STFC HEP Summer School, Durham
Led tutorials for UK-based experimental high-energy physics PhD students and assessed their posters

2025: Supervisor, SEPnet Summer Placement, QMUL
Supervised an undergraduate summer research project on simultaneous EFT+PDF fits

2025: Instructor, Statistics Tutorial, University College London
Organised a tutorial on statistical tools for ATLAS analyses at the annual ATLAS UK meeting

2024: Instructor, Scientific Measurement Seminar, QMUL
Led discussions with 70 physics undergraduates on experimental techniques and data analysis

2024 - present: Guest Lecturer, QMUL
Delivering special lectures on statistics and computing for undergraduate and postgraduate students

2024 - present: Instructor, Doctoral Computing Course, QMUL
Organising a course on Linux, Git and ROOT for ~6 particle physics PhD students each cohort

2024 - present: Mentor, QMUL
Mentoring PhD students on precision W/Z analyses with ATLAS

Outreach and Public Engagement

2025: Demonstrator, LEGO Physics Workshop, Seven Kings School
Organised an interactive LEGO workshop to illustrate particle physics concepts for 60 school students

2025: Speaker, The Wide World of Physics Taster Event, QMUL
Delivered a taster talk on the LHC to 30 school students preparing for university-level study

2025: Moderator, CERN International Masterclass, QMUL
Guided 40 school students in analysing real collision events recorded by the ATLAS detector

2025: Speaker, Queen Mary Futures, QMUL
Introduced 50 school students from under-represented backgrounds to particle physics and its applications

2024 - 2025: Speaker, Girls Into Physics, QMUL
Spoke to 40 school girls each year about careers in particle physics and addressed the gender gap

2024 - 2025: Mentor, Work Experience Week, QMUL
Introduced school students to particle physics research during week-long placements

2024: Speaker, Particle Physics Summer School, St. Paul's School, London
Gave a talk to 40 school students on careers in particle physics

2024: Speaker, Soapbox Science, London
Delivered an interactive talk on the LHC to 50 members of the public

Selected Publications

2025: ATLAS Collaboration, EPJC 85 (2025) 729
Measurement of W^\pm -boson differential cross-sections in proton–proton collisions with low pile-up data at $\sqrt{s} = 5.02$ TeV and 13 TeV with the ATLAS detector

2023: ATLAS Collaboration, PLB 846 (2023) 138222

Measurement of the cross-sections of the electroweak and total production of a $Z\gamma$ pair in association with two jets in pp collisions at 13 TeV with the ATLAS detector

2023: G. Poddar, PoS (LHC2023) 258

Measurement of Cross Sections of Electroweak and Total Production of $Z\gamma jj$ at 13 TeV with ATLAS

Talks and Posters

2025: ATLAS End-of-the-year Physics Workshop, CERN

Talk titled “It’s The Most Wonderful Time of The Year: m_W and $\sin^2 \theta_W$ Updates”

2025: QCD@LHC Conference, USA

Talk titled “PDF-Sensitive Measurements in ATLAS”

2024: ATLAS UK Standard Model+B-Physics Workshop, UK

Talk titled “Weak Mixing Angle from Drell-Yan Triple Differential Measurement at 8 TeV”

2024: ATLAS Standard Model Workshop, Slovenia

Talk titled “Weak Mixing Angle Measurements at the LHC”

2024: IOP Joint APP, HEPP and NP Conference, UK

Talk titled “Studies on $Z\gamma$ Scattering at 13 TeV with ATLAS Detector”

2023: ATLAS Standard Model Workshop, Czech Republic

Talk titled “Experimental Techniques in VBS Measurements”

2023: LHCP Conference, Serbia

Poster titled “Measurement of Cross Sections of Electroweak and Total Production of $Z\gamma jj$ at 13 TeV with ATLAS”

2023: ATLAS Week, CERN

Poster titled “Differential Measurements of Electroweak Production of $Z\gamma jj$ at 13 TeV with ATLAS”

2022: LHCC Week, CERN

Poster titled “Test of the First Prototype of ATLAS Liquid Argon Calibration Boards for the HL-LHC”

2022: ATLAS France Physics Workshop, France

Talk titled “ $Z\gamma$ Vector Boson Scattering at 13 TeV with ATLAS”

2021: ATLAS Liquid Argon Week, CERN

Talk titled “LAr Phase II Upgrade Electronics Status”

Grants and Awards

2025: SEPnet Public Engagement Award

Awarded for outreach contributions as part of the Particle Physics Research Centre at QMUL

2025: DESY Fellowship in Experimental Particle Physics

Awarded but declined due to extension of postdoctoral position at QMUL

2025: SEPnet Summer Placement Grant

Awarded ~£2000 as the sole principal investigator to supervise an undergraduate summer student on a novel combined PDF and EFT study

2025: Breakthrough Prize in Fundamental Physics

Awarded for contributions to LHC Run-2 physics results as part of the ATLAS collaboration

Schools

2023: CERN-Fermilab Hadron Collider Physics Summer School, CERN

2021: Advanced VBS Training School, Italy

2021: IN2P3 School of Statistics, Online

Technical Skills

Programming and Version Control: Bash, C++, Python, Java, Perl, Git

Data Analysis: ROOT, xRooFit, HistFitter, TRExFitter, xFitter, MINUIT

Machine Learning: XGBoost

Instrumentation and Automation: LabVIEW

HEP Software: APPLgrid, PineAPPL

Monte-Carlo Generators: Powheg-Box, DYTurbo

Communication: Latex, MS Office, HTML/CSS

Operating Systems: Linux, Windows, macOS