

# 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 (LHCP2023) 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