

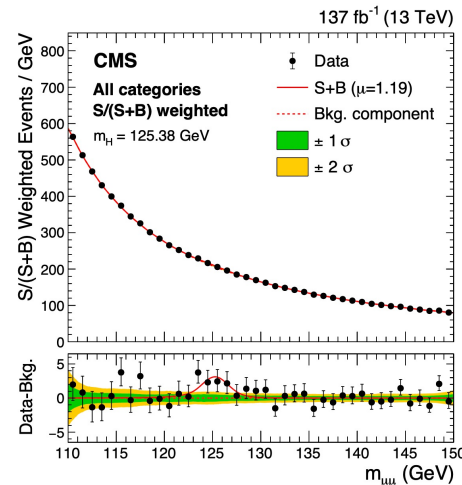
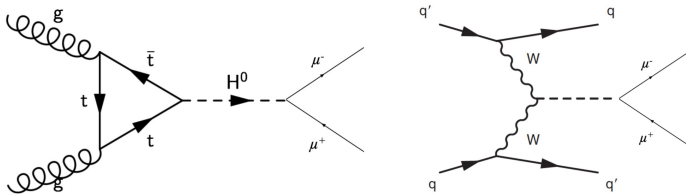
QMUL Postdoc, Higgs $\rightarrow \mu\mu$ in ATLAS Run3

Goal: First observation and cross-section measurement of Higgs $\rightarrow \mu\mu$ in combined Run2+Run3 data at ATLAS

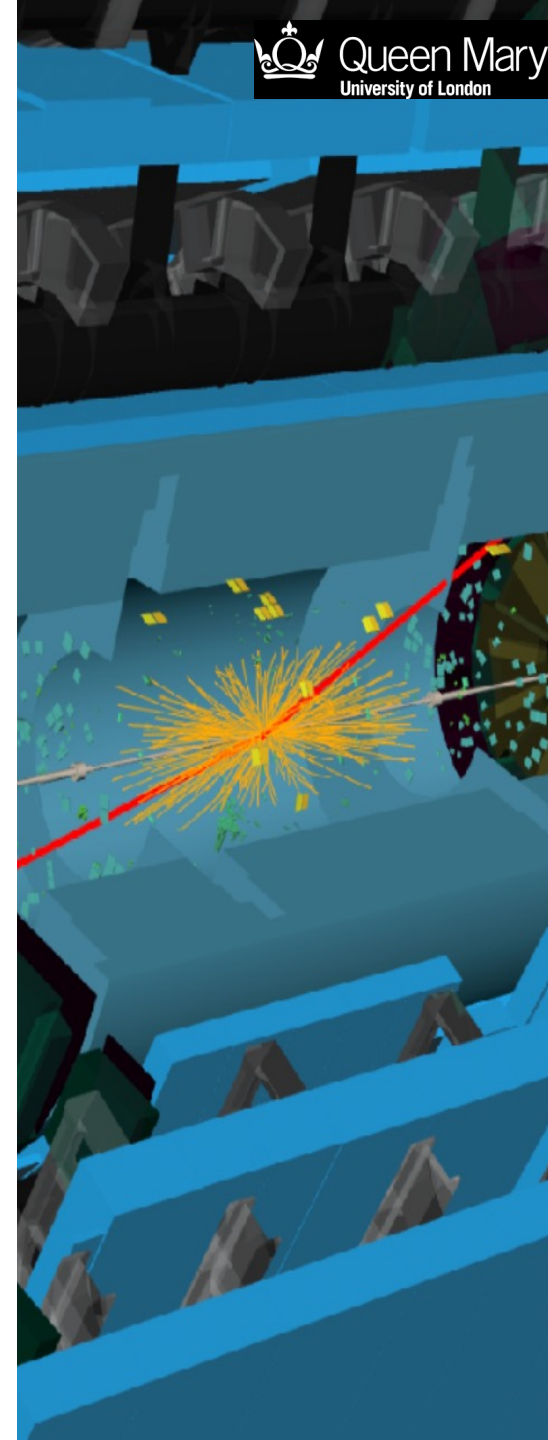
In Run 2, ATLAS and CMS have observed the Higgs Yukawa coupling to 3-rd generation fermions, τ -leptons and b-quarks. What about Higgs coupling to first or 2nd generation fermions? Coupling as predicted? \rightarrow Standard Model - Or not? \rightarrow BSM!

In Run2: CMS: 3σ [1] and ATLAS a 2σ excess [2] (stats limited)

- Challenge: tiny signal over large Drell-Yan (Z/γ) $\mu\mu$ production
- \rightarrow Precise modelling of DY background
 - \rightarrow Precise μ momentum measurement
 - \rightarrow Combine several production modes



[1] JHEP 01 (2021) 148. [2] Phys. Lett. B 812 (2021) 135980



Particle Physics Research Center at QMUL

10 academics, 9 PDRAs and 22 PhD students + technical team:

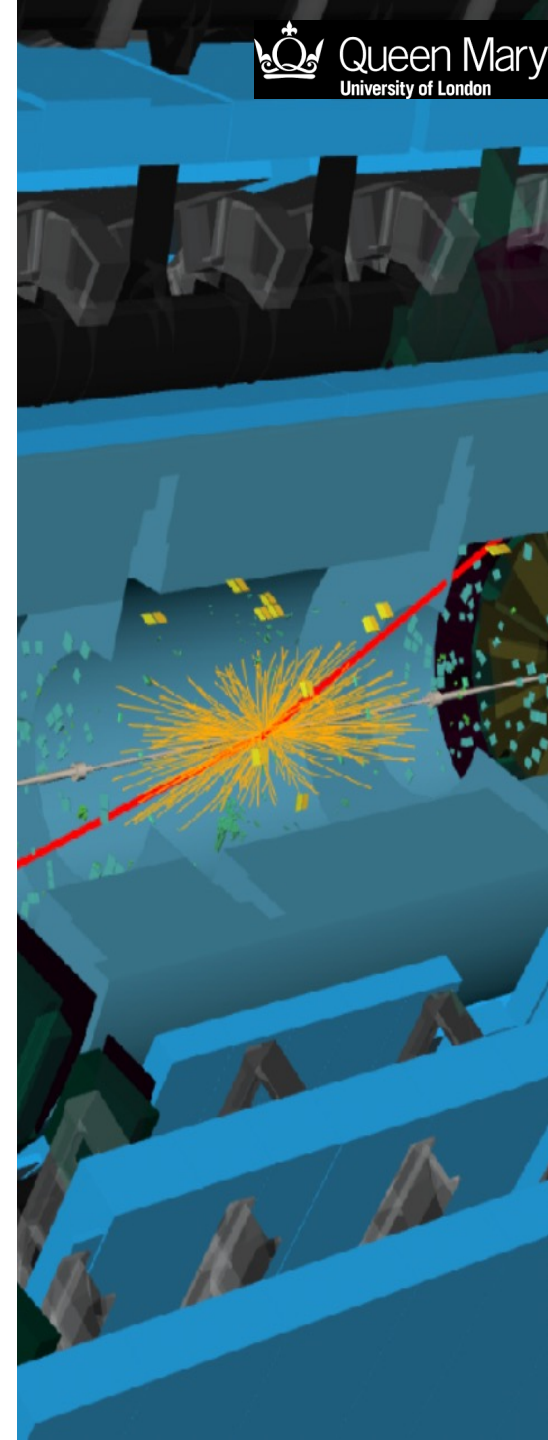
<https://www.qmul.ac.uk/spcs/pprc/>

Active in ATLAS:

- Standard Model Higgs \rightarrow bb and Higgs \rightarrow $\mu\mu$
- BSM: di-Higgs production, heavy Higgs bosons (A, H^\pm)
- Searches for Dark Matter
- Precision Standard Model measurements
- Flavour physics
- ATLAS ITK and L1Calorimeter upgrade

Also: Neutrino physics (NOvA, DUNE, ..) and detector development.

Higgs \rightarrow $\mu\mu$: Ulla Blumenschein, Seth Zenz and Eram Rizvi



Queen Mary University of London

You will be positioned in London

Regular travel to CERN, workshops, conferences etc

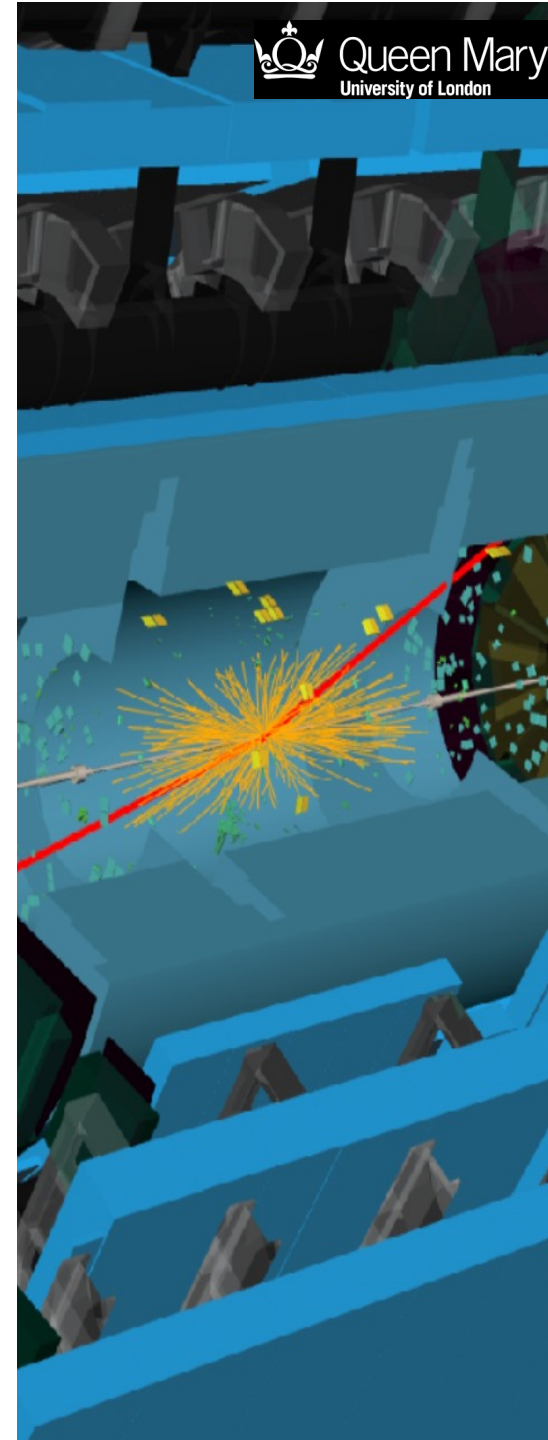
QMUL is situated in East London

Russell-group university with over 33000 students.



Department of Physics and
Astronomy with research centres
in Astronomy, Theoretical Physics,
Condensed Matter and Particle
Physics

- Well connected to London tube and train lines. Easy commuting and access to train stations and air ports.
- Broad offer of restaurants, pubs, etc.



Conditions of contract and Application

Requirements:

You will have completed or be about to complete a PhD in particle physics and have a strong track record in experimental particle physics. You should be proficient in programming in C++ and Python.

Conditions:

Fixed term (24 months) with an expected start date on or soonest after June/July 2023. The starting salary will be Grade 4, in the range of £37,348 - £43,592 per annum pro rata, inclusive of London Allowance.

Application:

Closing date for application: **17 May 2023**

More details:

<https://www.qmul.ac.uk/jobs/vacancies/items/7782.html>

