

3 PhD Positions at RWTH Aachen University

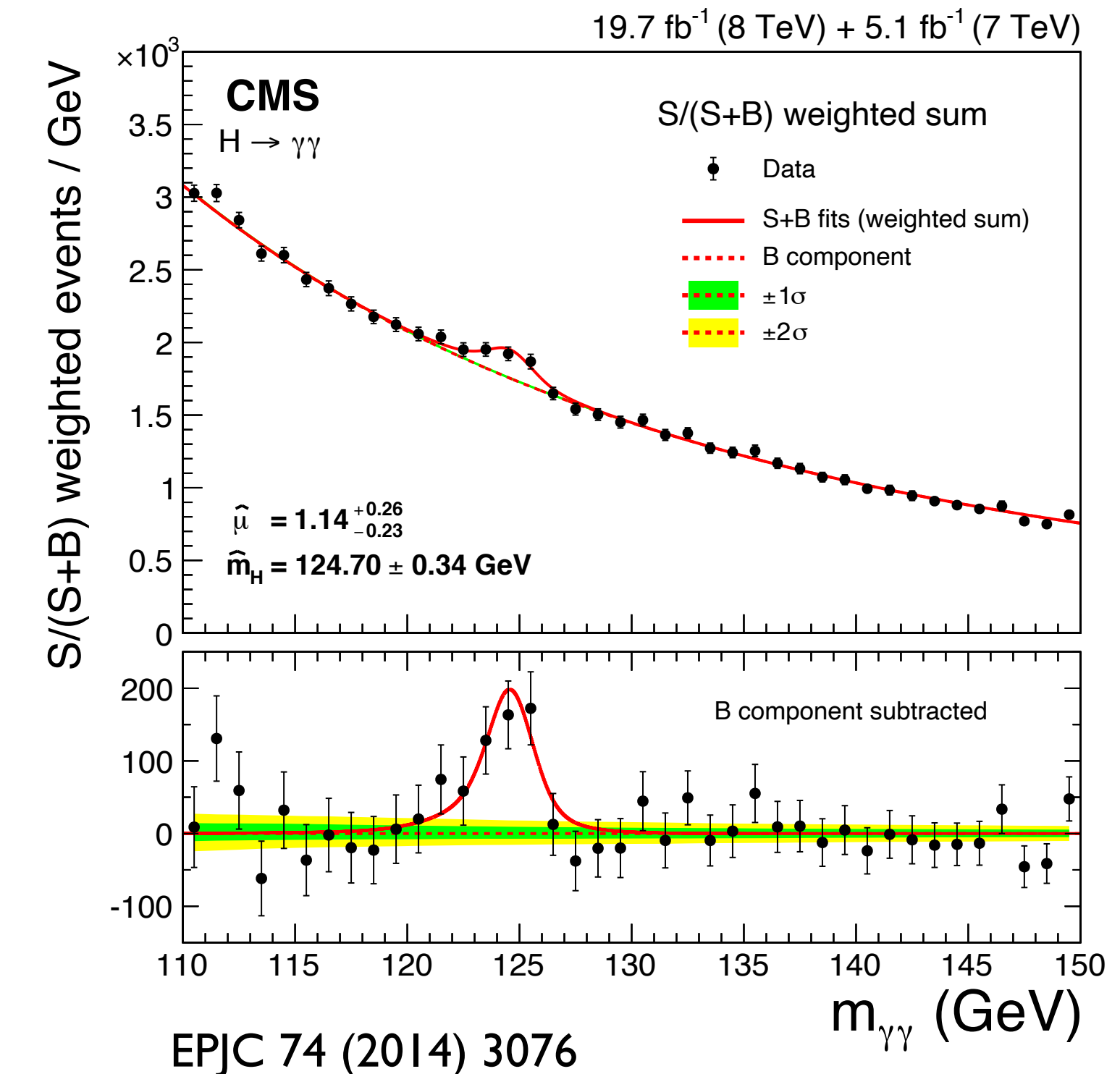
CMS Job Matching Event 2022

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Research Topics

- Study of the Higgs boson in the **$H \rightarrow \gamma\gamma$ decay**
 - Small BR ($\sim 0.2\%$) but excellent S/B = a precision channel
- Search for very rare **HH** production (\rightarrow self-coupling!)
- Search for rare **tH** production (\rightarrow a missing piece!)
- Precise **differential** measurements (\rightarrow SMEFT!)
- **Deep learning** promises improved precision
 - in photon identification, isolation, energy regression
 - in parameter estimation (“likelihood-free inference”)
 - in (calorimeter) simulations



Your PhD topic will be discussed and fixed together with you!

Our Group ([link](#))

- Johannes Erdmann (professor)
- Florian Mausolf (PhD student): Higgs, Photons, Deep Learning
- Jan Lukas Späh (PhD student): Higgs, Photons
- Ali Çoban (MSc student): Photons, Deep Learning
- David Kavtaradze (MSc student): Higgs, Deep Learning
- Roman Suveyzdis (MSc student): GPUs

- In our group, we all work together on related topics
- In particular, **all PhD students work closely together**
- You will also be embedded in the CMS $H \rightarrow \gamma\gamma$ and egamma groups



Contract Conditions

- 3 PhD positions:
 - 1 position ([link](#)) within the Research Training Group ([further info](#)) to be filled asap
 - 1 position ([link](#)) to be filled in early 2023
 - 1 position (not yet advertized) to be filled during 2023
- Start times are somewhat flexible
- Contract duration: 3 years (with potential for prolongation if required)
- Salary: 75% of “TV-L 13” for RTG position and 66% for other positions*
- Longer stays at CERN (typically in the 2nd PhD year) are encouraged and can be funded
- Travel to conferences, workshops and one of the big PhD schools

*The two types of positions have different funding sources

Location and Deliverables

- Typically, most of the time will be at RWTH Aachen University
- Aachen: 250k inhabitants with 50k students (so, yes, it's a students' city)
 - a “European” city, bordering NL & B and with rich history
- You'll be embedded a strong particle physics environment:
 - 6 CMS groups + strong theory groups
- Local computing resources:
 - Access to Aachen HTCondor CPU cluster
 - 4 Nvidia GPUs for our group
- Expected deliverables:
 - a PhD thesis ;-) after 3 years (often + a few months)
 - contributions to CMS papers/PAS as well as to CMS operation (EPR)



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