

# Excited leptons and diboson resonances with the ATLAS detector

FH Fellow meeting - 26/03/2021

Evgeniya Cheremushkina

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- December 2020: 1<sup>st</sup> PostDoc (Klaus Mönig) in DESY, Zeuthen, Germany.



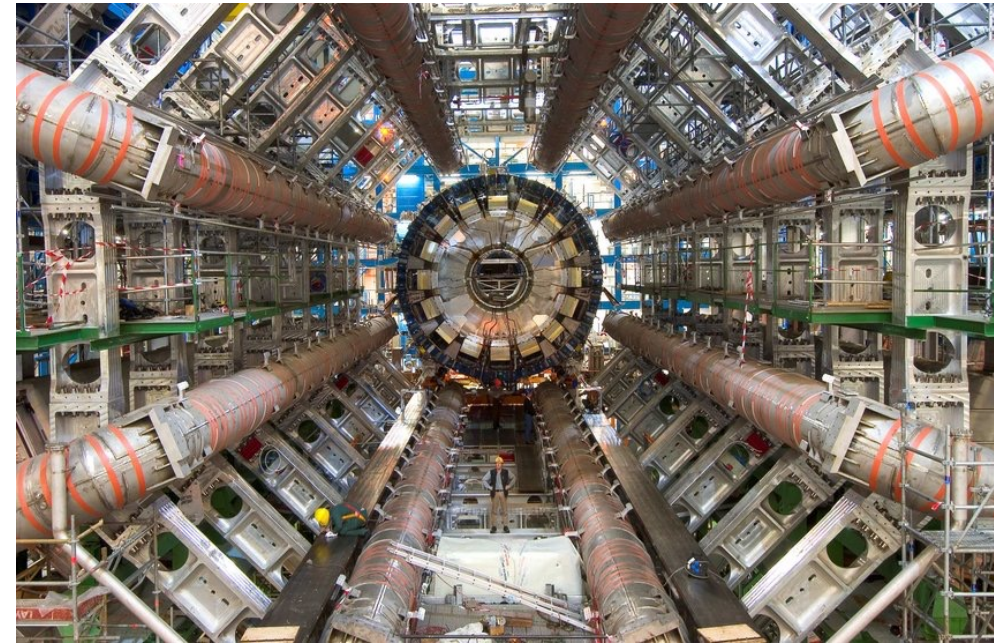
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### ATLAS experiment, CERN:

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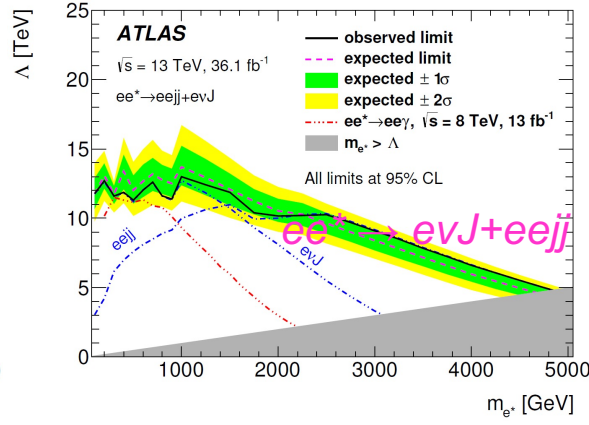
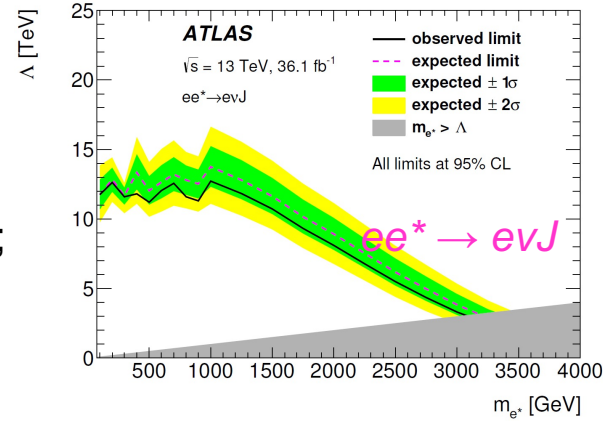
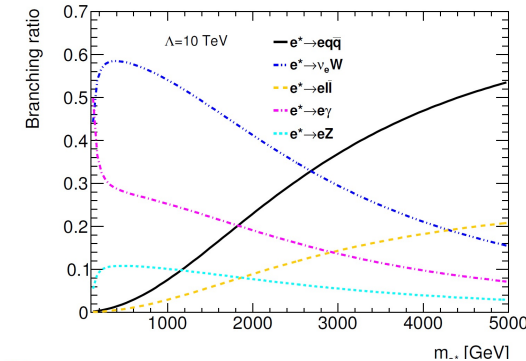
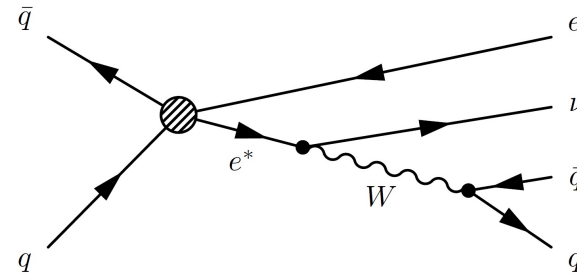


# Research with ATLAS

## Activities and challenges

### Excited electrons search:

1.  $pp$ , 13 TeV, 36.1 fb<sup>-1</sup>: Eur. Phys. J. C 79 (2019) 803:
  - PhysRevD.42.815 Compositeness Model (1990);
  - Hierarchy problem (3 fermions generations with different  $m_f$ );
  - **Role:** The solo analyst for the  $ee^* \rightarrow evW$  (first in ATLAS);
  - The combined limit with  $eejj$  final state for the  $e^*$  model were set;
  - The strongest limits for the model parameters were set.
2. Full Run2 analysis:
  - **Role:** contact person, signal generation.



# Research with ATLAS

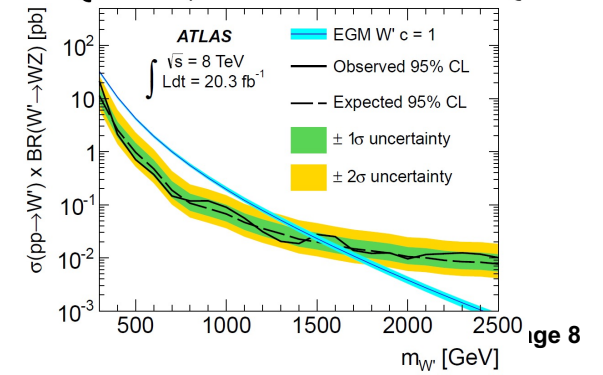
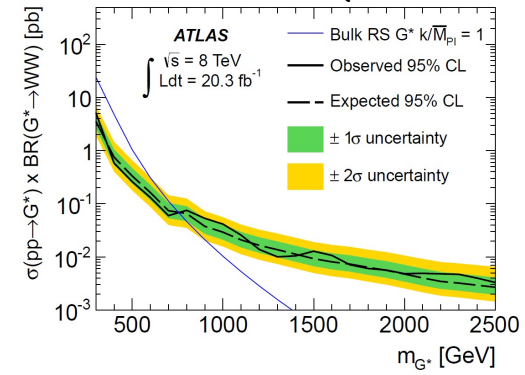
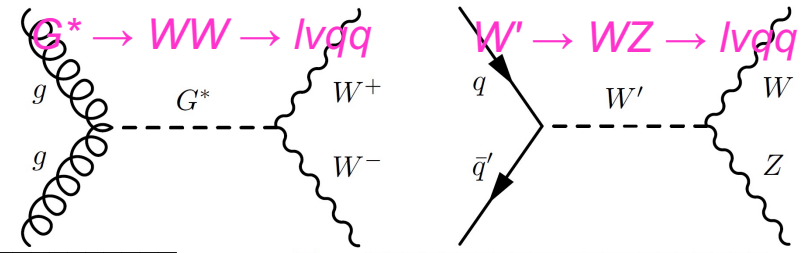
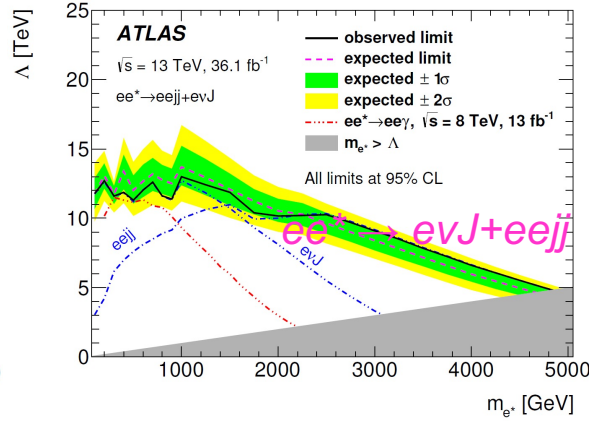
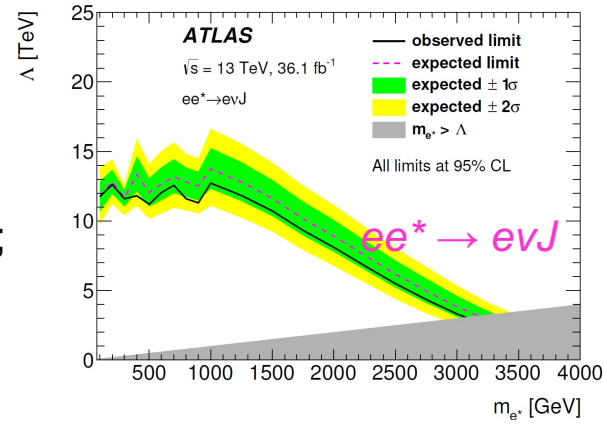
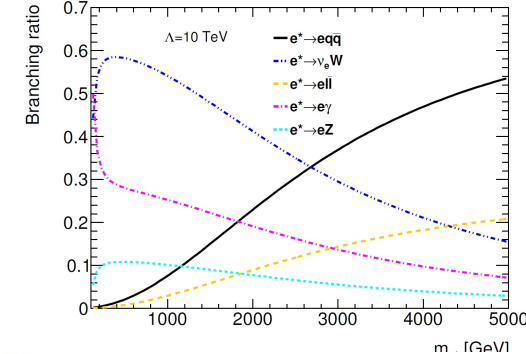
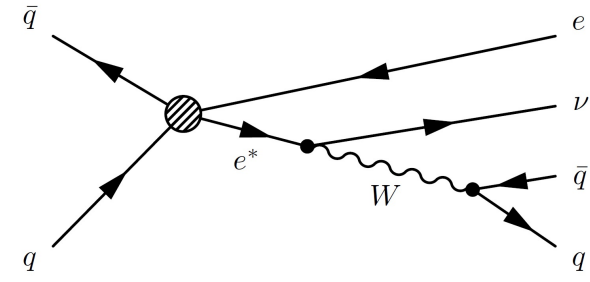
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### Diboson resonances search:

- pp, 8 TeV, 20.3 fb<sup>-1</sup>: [Eur. Phys. J. C \(2015\) 75:209](#);
  - RS KK  $G^*$  – extended Randall-Sundrum model (5th warped dimension);
  - 2 branes: TeV (SM) and Pl (gravitation);
  - Hierarchy problem (gravitation weakness on TeV brane);
  - **Role:** Objects & event selection;
- pp, 13 TeV, 36.1 fb<sup>-1</sup>: [JHEP 09 \(2016\) 173](#):
  - **Role:** Derivation creation and processing;





# ATLAS detector operation

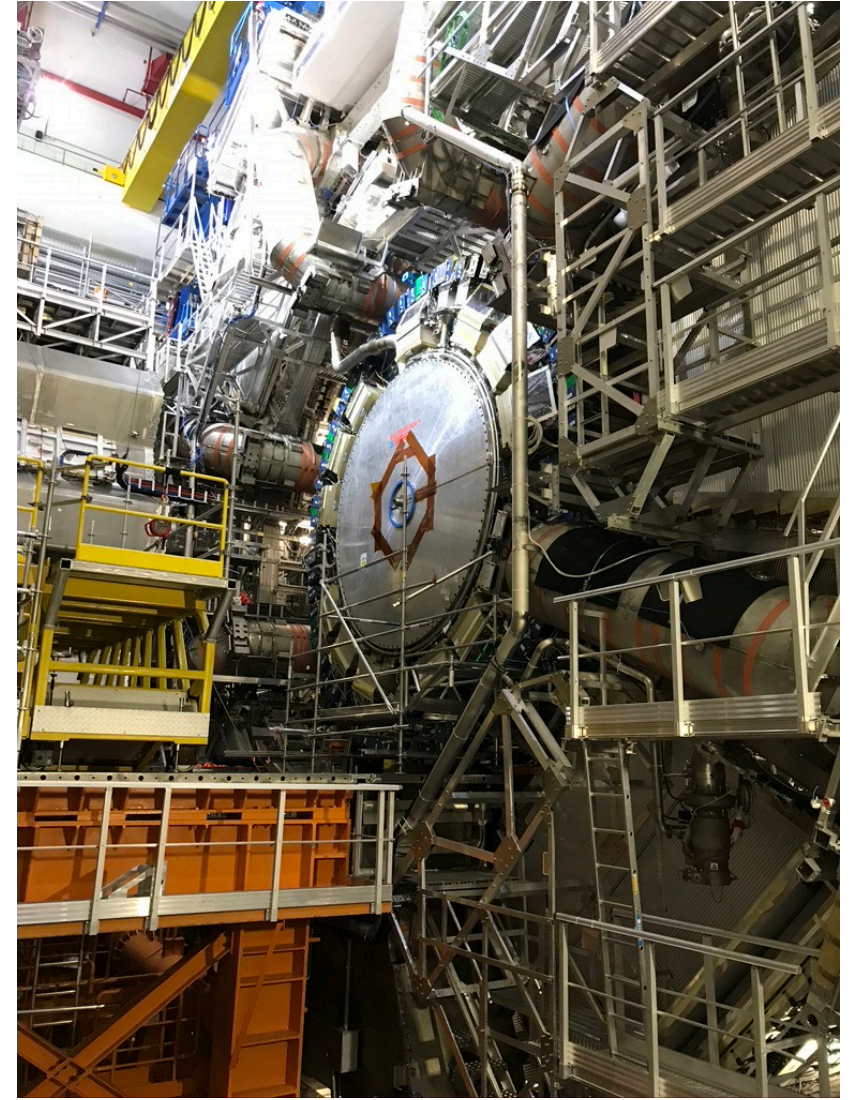
## Activities

### ATLAS Calorimeters shifts (2011-2020):

- Online ATLAS Calo/Fwd shifter in the ATLAS Control Room;
- TileCal DQM team leader, DQ validator; Offline Calo DQ shifter;

### Tile calorimeter Run Coordinator (2021 Jan-Apr):

- Responsible manager for all calibrations and tests activities;
- Participation in electronics maintenance.



# Thank you, for your attention

An example in template reminded me about another nice animation: “Inner Life Of A Cell”  
[https://www.youtube.com/watch?v=B\\_zD3NxSsD8](https://www.youtube.com/watch?v=B_zD3NxSsD8)