

# Searching for Ultra Rare Processes Using the Large Hadron Collider

$$t \rightarrow q\gamma$$

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# Overview

## The Large Hadron Collider

- The Standard Model of Particle Physics

- LHC And ATLAS

- Picking Through The Data

## Search For Ultra Rare Decays

- Machine Learning

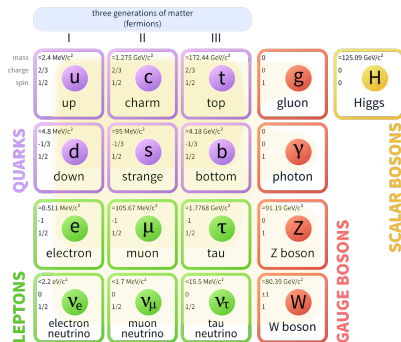
## Outlook and Conclusions

# The Standard Model of Particle Physics

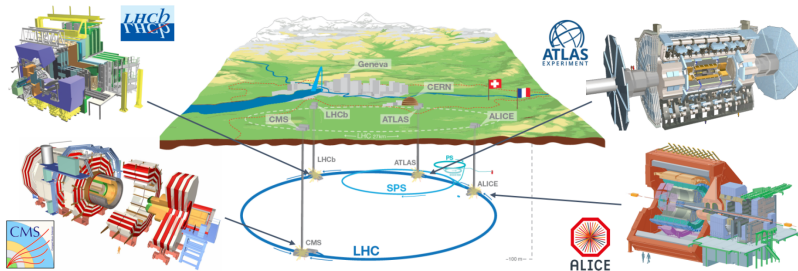
- Newest Addition: Higgs Boson  
- 2012



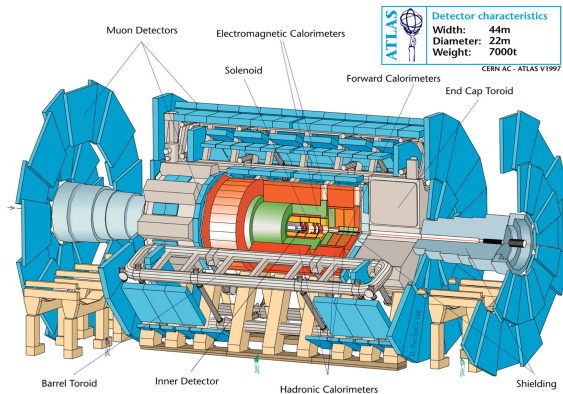
## Standard Model of Elementary Particles



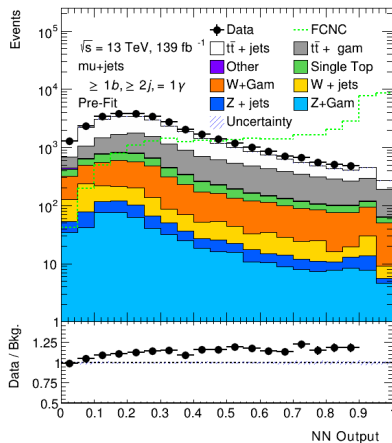
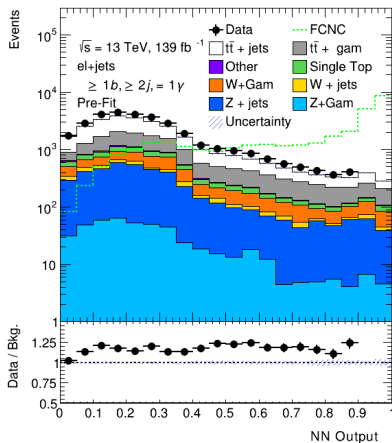
# The Large Hadron Collider



# The ATLAS Detector

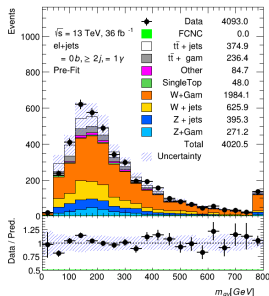


# The Standard Model of Particle Physics

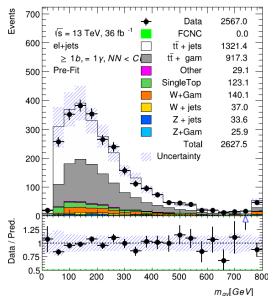


# Initial Output Plots

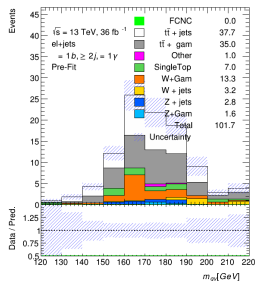
## ► Validation Region 1



## ► Validation Region 2



## ► Signal Region



# Outlook



▶ Questions?



# Backup

# FCNC Diagrams

