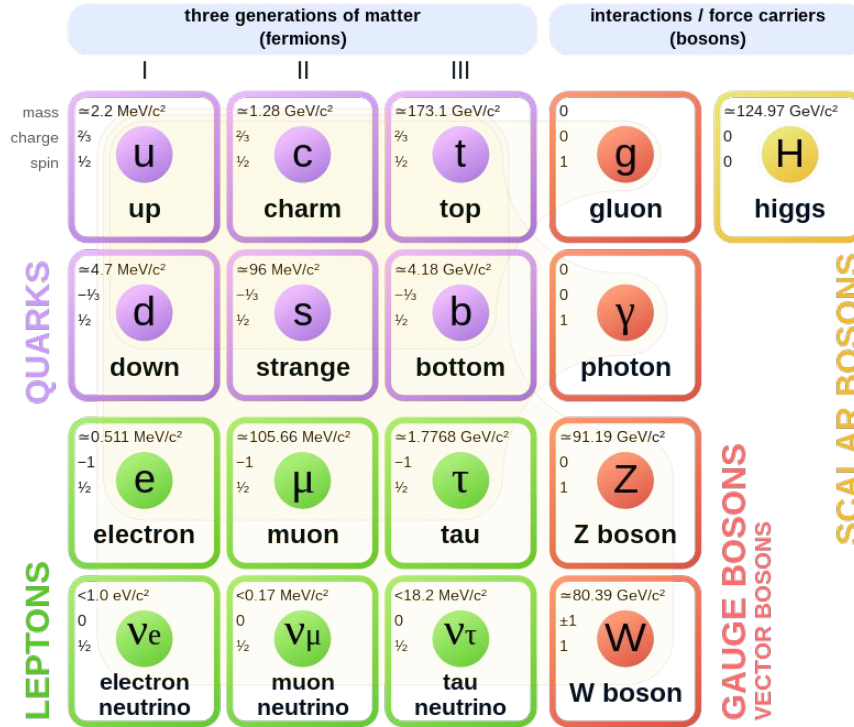




Finding the Z - boson

Filip Pantic
Vladimir Ignjatijevic
Supervisor:
Nikolina Ilić

Standard Model of Elementary Particles

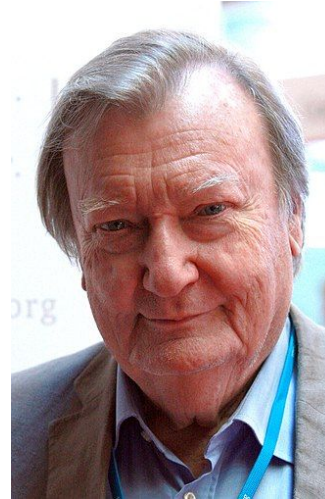


History

1933. - Enrico Fermi, theory of the weak force.

SPS → proton-antiproton collider.

1983. - W,Z boson observed for the first time.



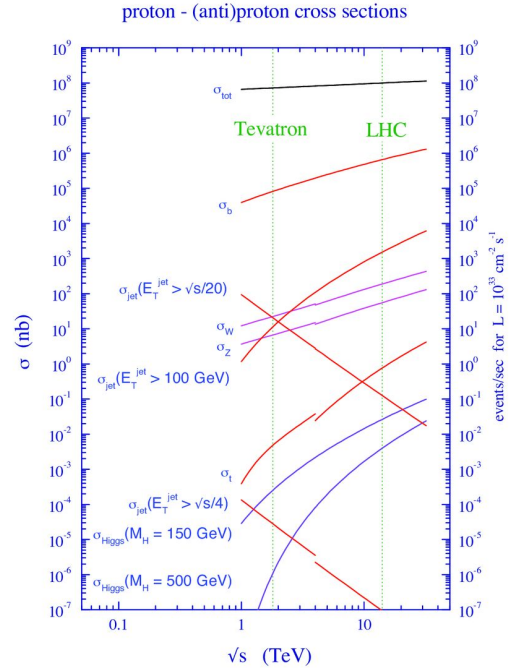
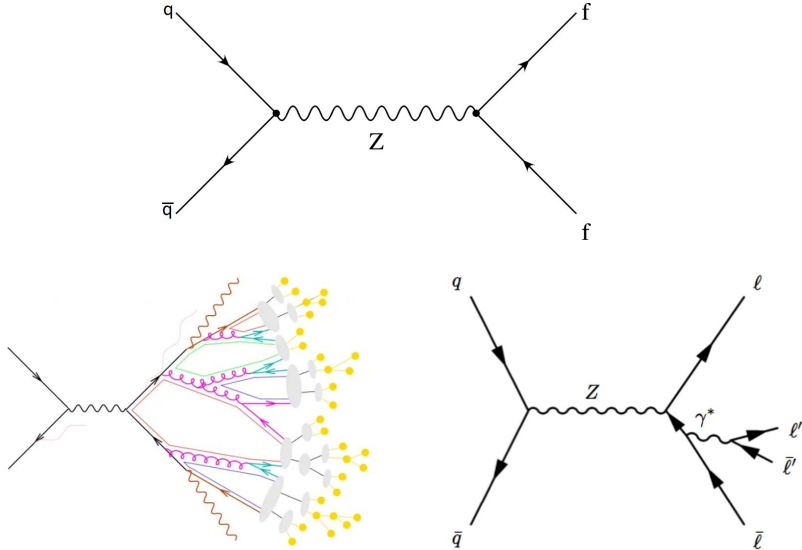
Carlo Rubbia



Simon van der Meer

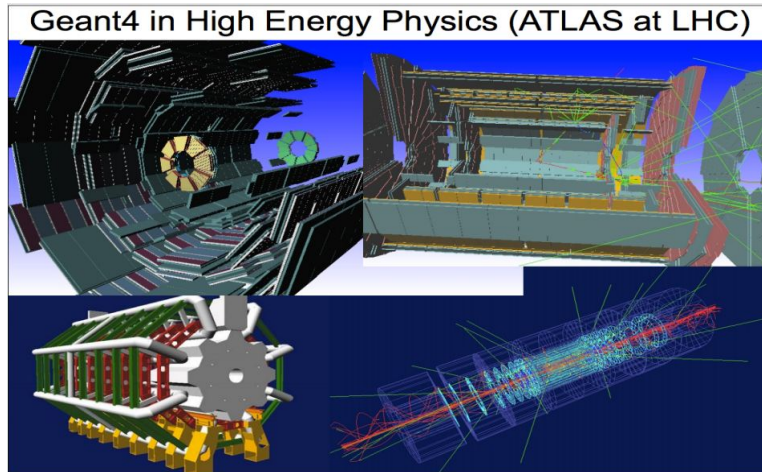
Prechecking a theory - simulation

Generating events

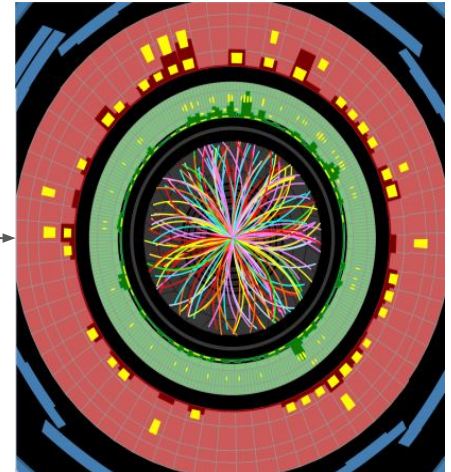


Prechecking a theory - simulation

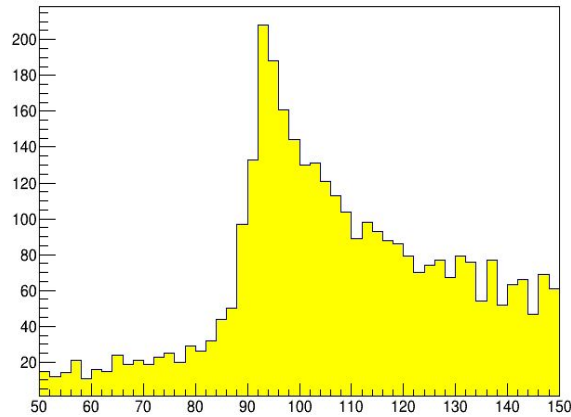
Detector simulation



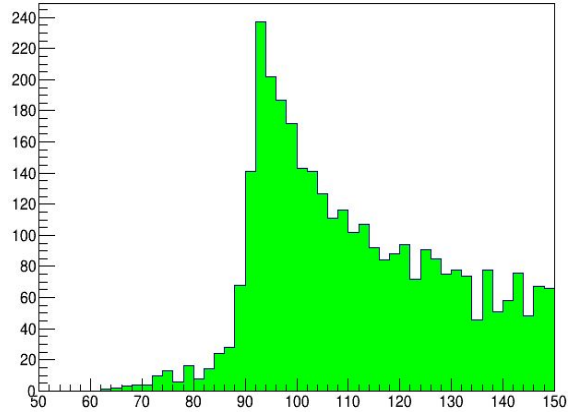
Compare



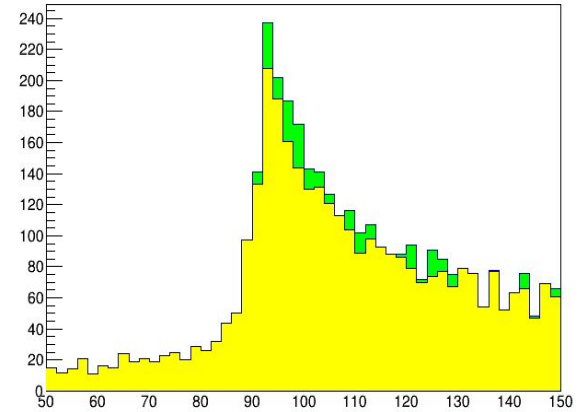
Simulated and reconstructed Z decay



Z boson decay reconstructed



Z boson decay simulation

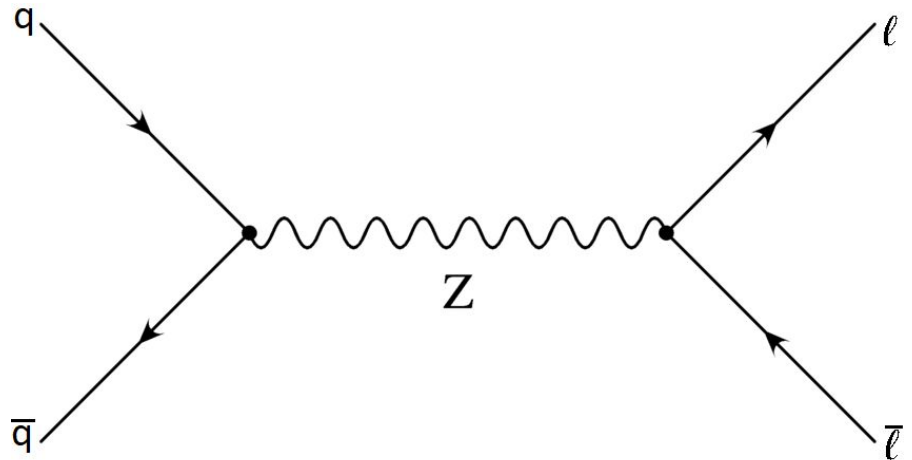


Comparison

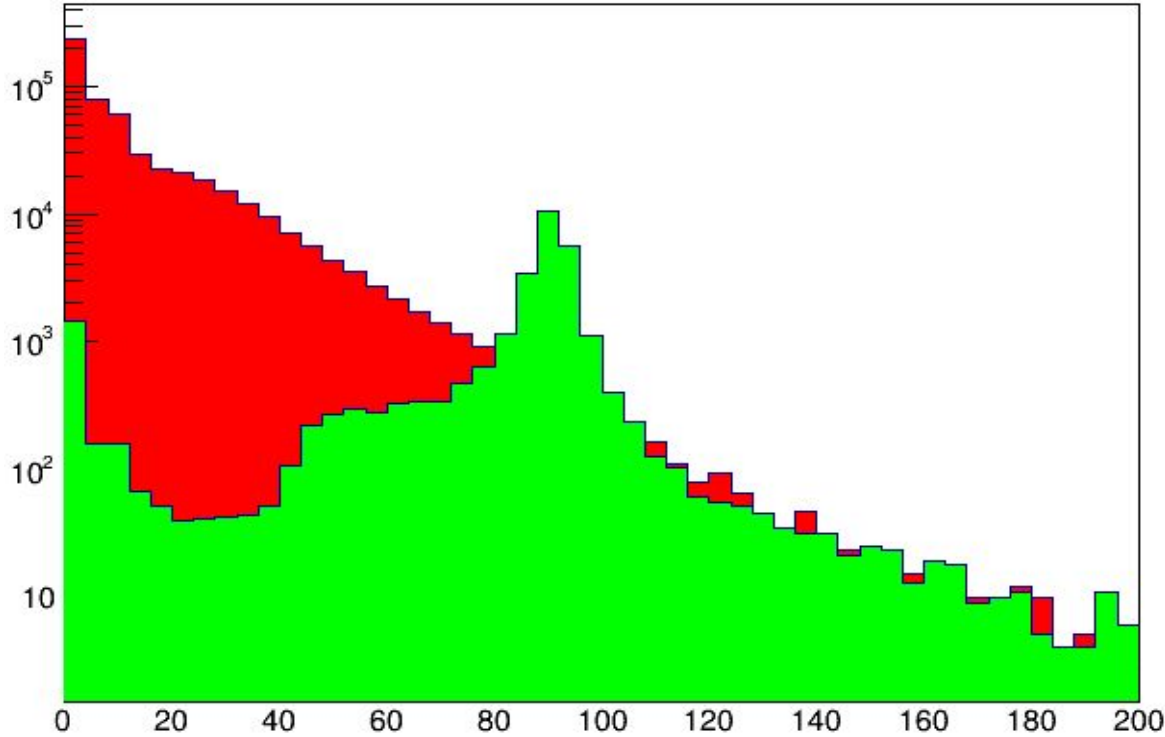
Z boson decay to muons

Conditions:

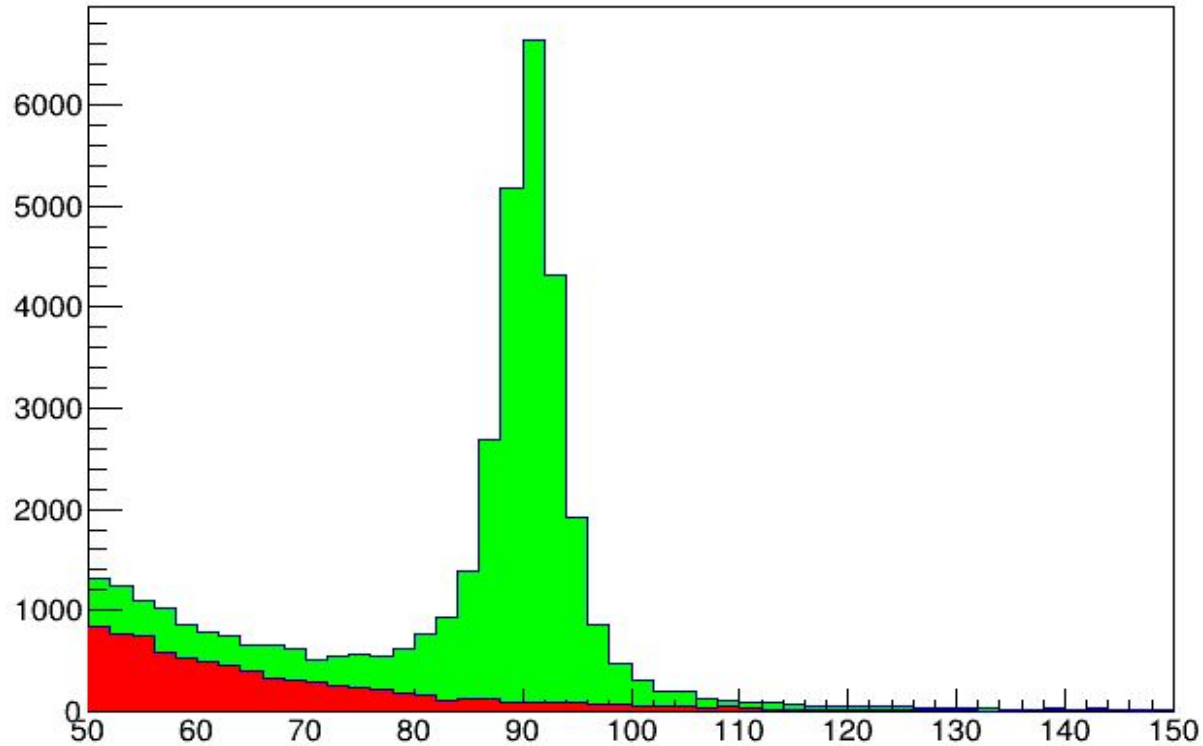
1. number of muons
2. muons charge
3. muons energy $> 20\text{GeV}$

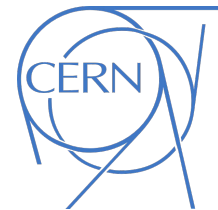


Z peak in real data - *Unfiltered*



Z peak in real data





Thank you for your attention!

