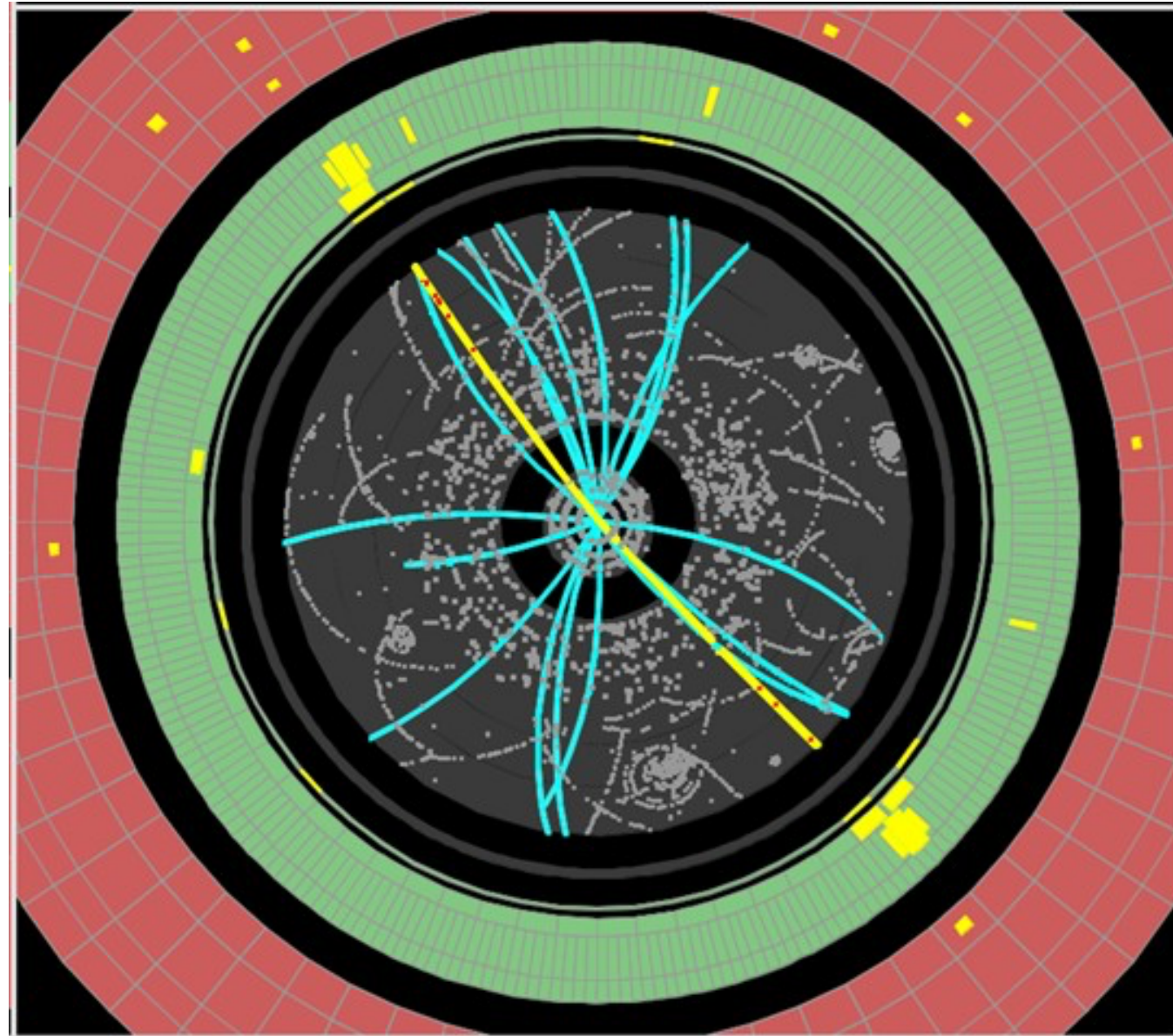
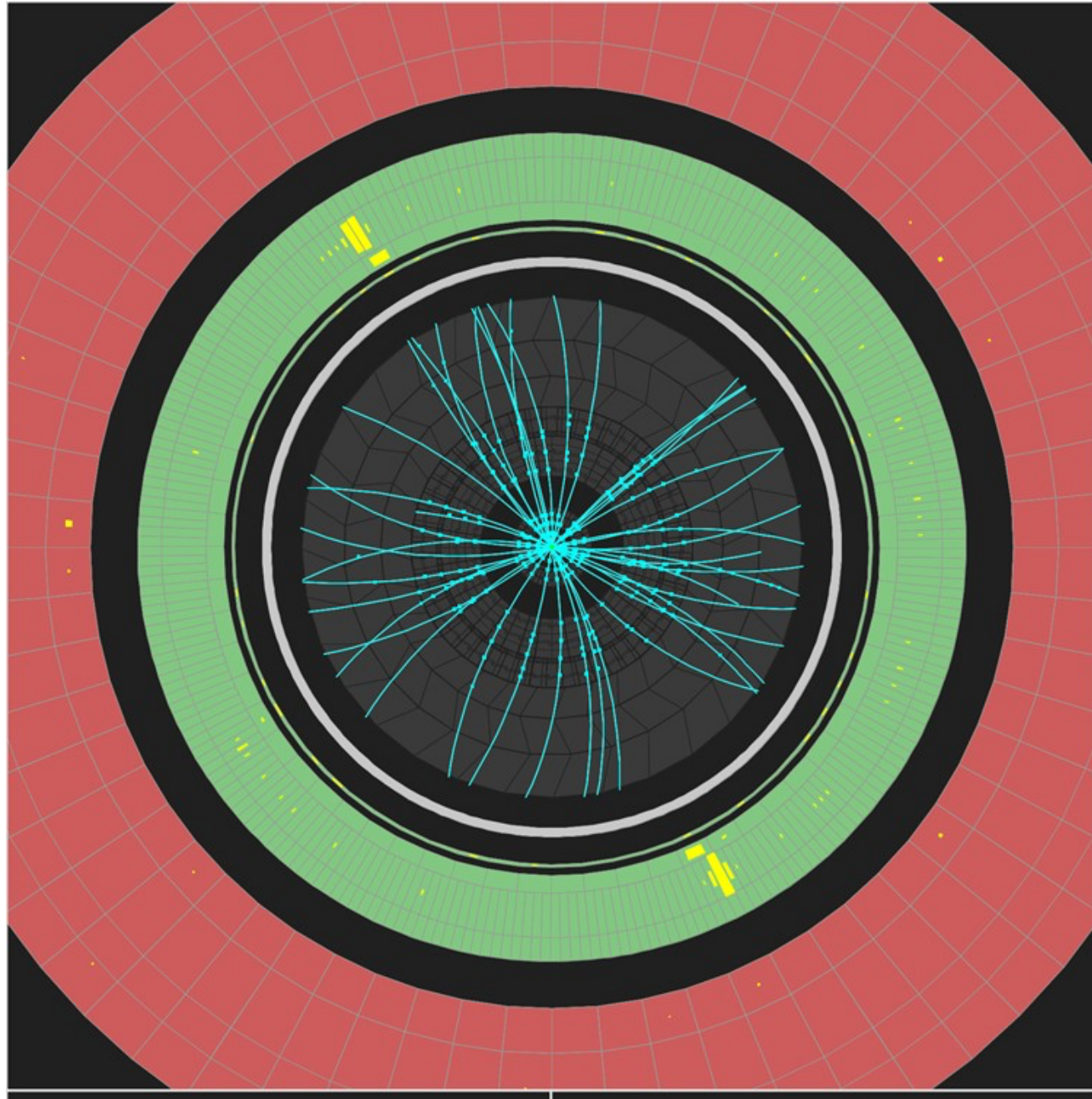


# What particles are in this event?

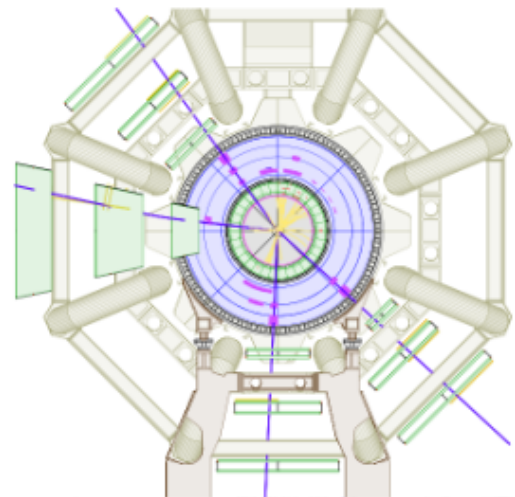
---







# ATLAS EXPERIMENT



YZ view

500 microns-meter

XY view

500 microns-meter

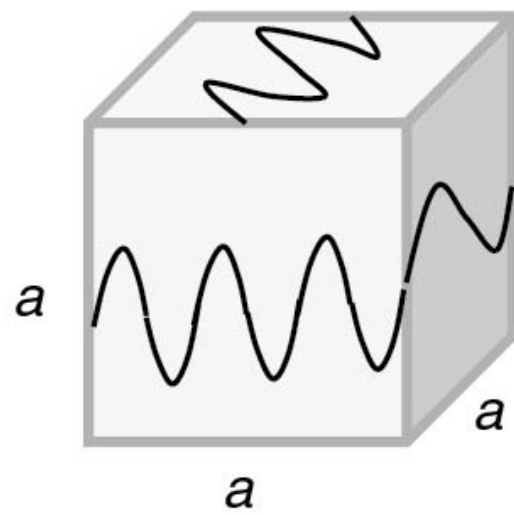
Run Number: 189280,  
Event Number: 143576946  
Date: 2011-09-14, 11:37:11 CET

EtCut > 0.4 GeV  
PtCut > 0.4 GeV  
Vertex Cuts:  
Z direction < 1cm  
Rphi < 1cm

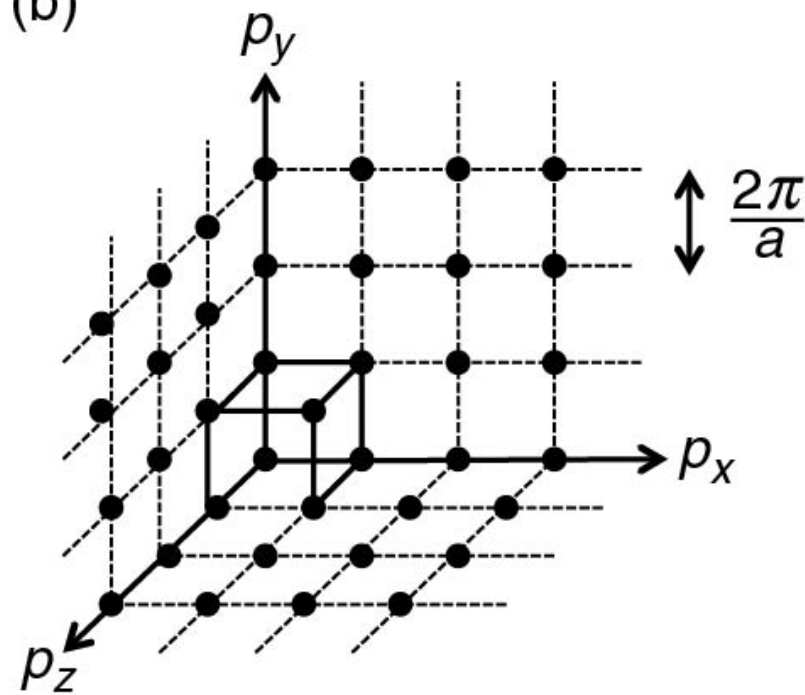
Muon: blue  
Cells: Tiles, EMC

Persint

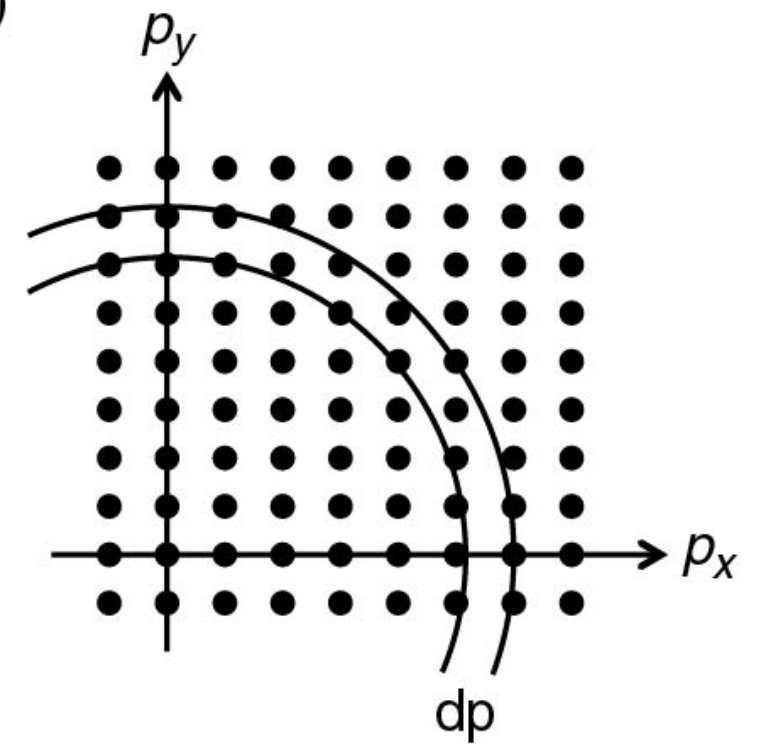
(a)

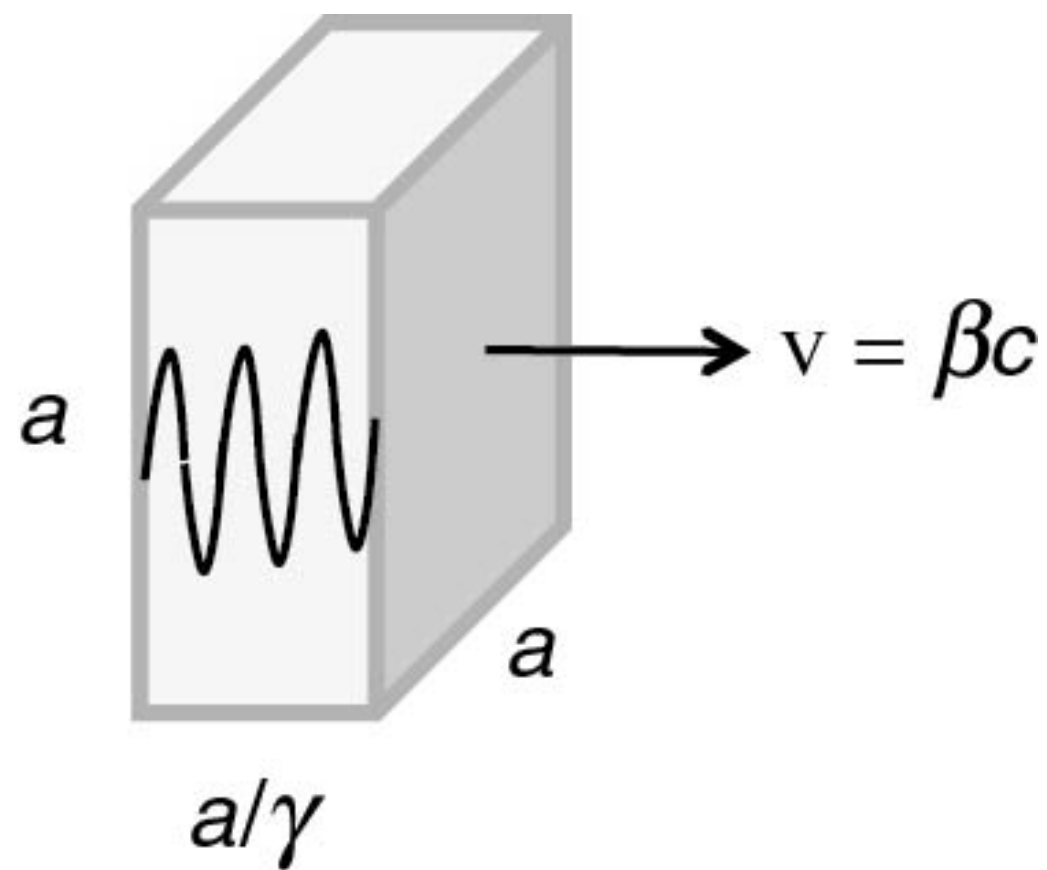
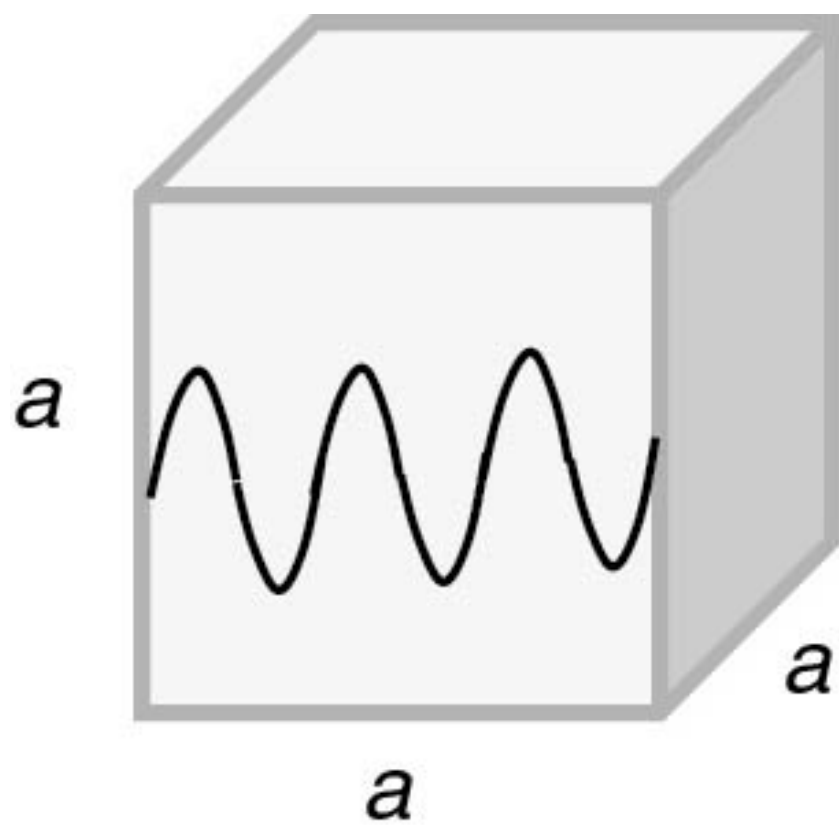


(b)

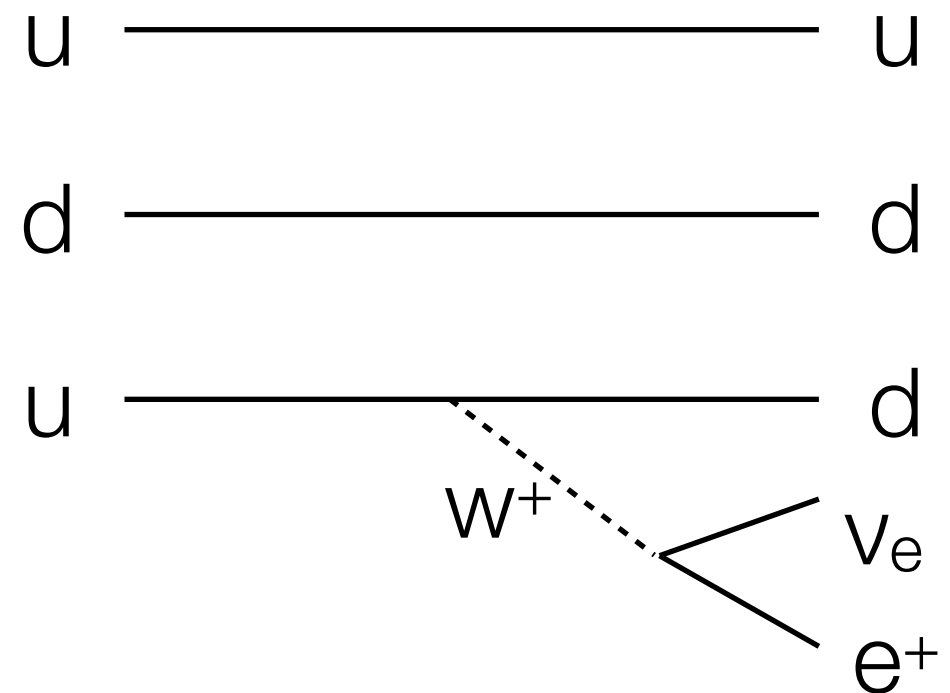
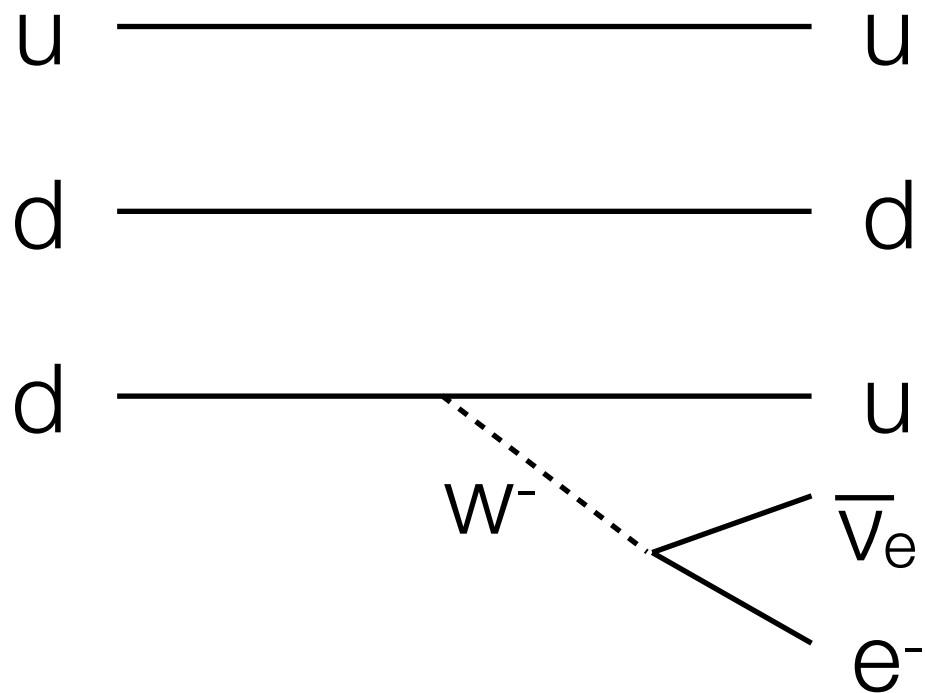


(c)





Which one of these diagrams is forbidden?  
[hint: use Fermi's golden rule]



- The cross section of the Higgs boson is roughly 48 pb at a center of mass energy of 13 TeV
- The branching fraction to two photons is 0.3%
- Assume the detector
  - Has had 35 fb<sup>-1</sup> of delivered data
  - Has a photon efficiency of 80%
  - Is instrumented with as an angular acceptance of 10%
- How many Higgs events were detected?