



Bugün
CMS algicin'da bir olay

Hazırlayan
Ece ASILAR

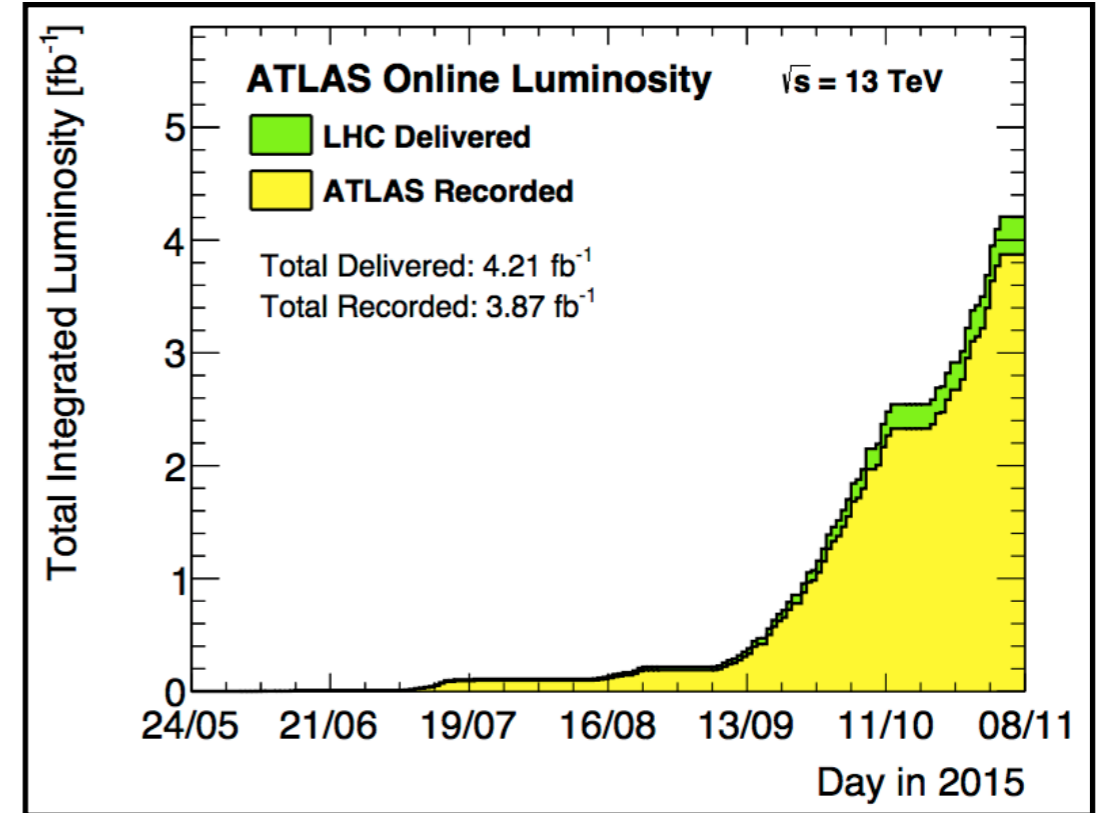
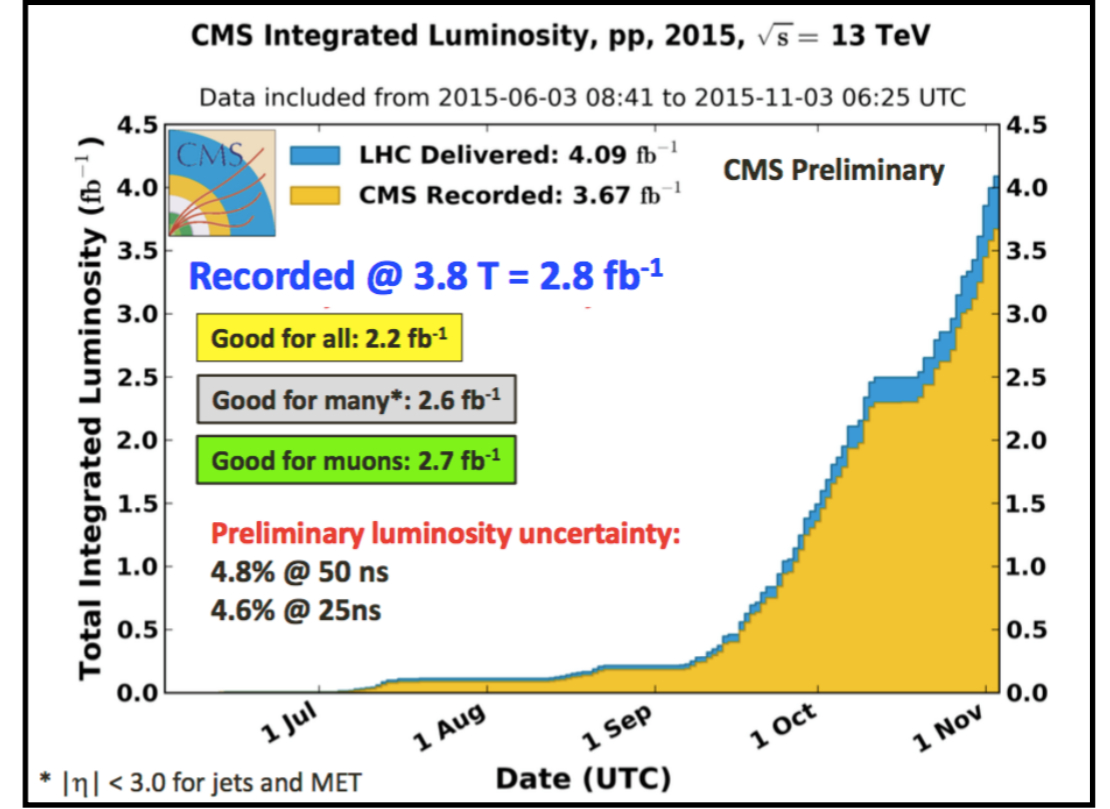
Simdi neler oluyor ?

Bazi gecen yil kaydedilen veri ile ilgili bilgiler

Su anda:

Mayis'ta yeniden basliyacak olan fizik carpismalari icin bekliyoruz. (Analizciler olarak)

LHC ve dedektor insanlari hizlandiriciyi ve dedektorleri hazir etmeye calisiyorlar.



CMS ALGICI

Total weight : 14,000 tonnes
Overall diameter : 15.0 m
Overall length : 28.7 m
Magnetic field : 3.8 T

STEEL RETURN YOKE
12,500 tonnes

SILICON TRACKERS

Pixel ($100 \times 150 \mu\text{m}$) $\sim 16\text{m}^2 \sim 66\text{M}$ channels
Microstrips ($80 \times 180 \mu\text{m}$) $\sim 200\text{m}^2 \sim 9.6\text{M}$ channels

SUPERCONDUCTING SOLENOID

Niobium titanium coil carrying $\sim 18,000\text{A}$

MUON CHAMBERS

Barrel: 250 Drift Tube, 480 Resistive Plate Chambers
Endcaps: 468 Cathode Strip, 432 Resistive Plate Chambers

PRESHOWER

Silicon strips $\sim 16\text{m}^2 \sim 137,000$ channels

FORWARD CALORIMETER

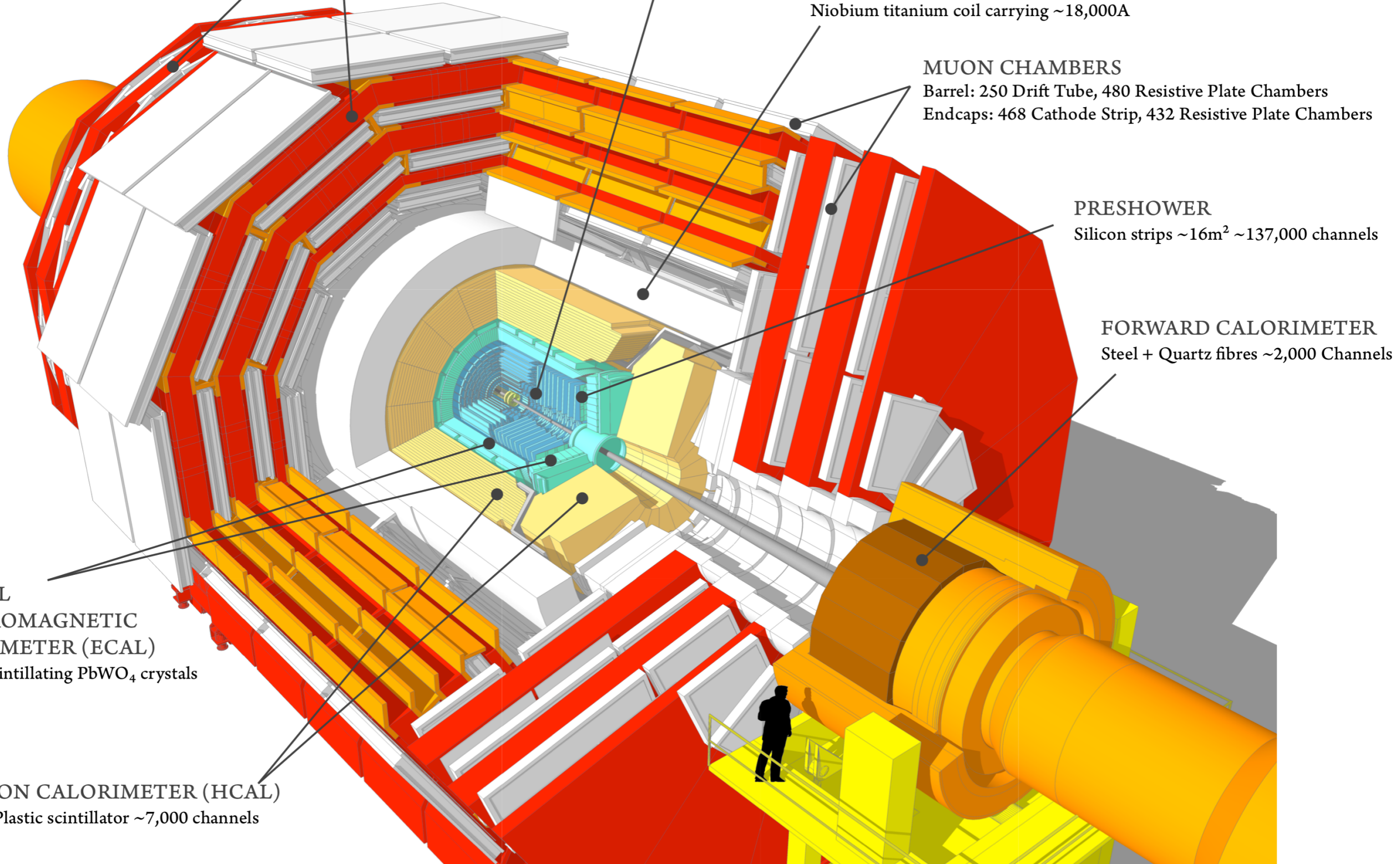
Steel + Quartz fibres $\sim 2,000$ Channels

CRYSTAL
ELECTROMAGNETIC
CALORIMETER (ECAL)

$\sim 76,000$ scintillating PbWO_4 crystals

HADRON CALORIMETER (HCAL)

Brass + Plastic scintillator $\sim 7,000$ channels



CMS ALGICI

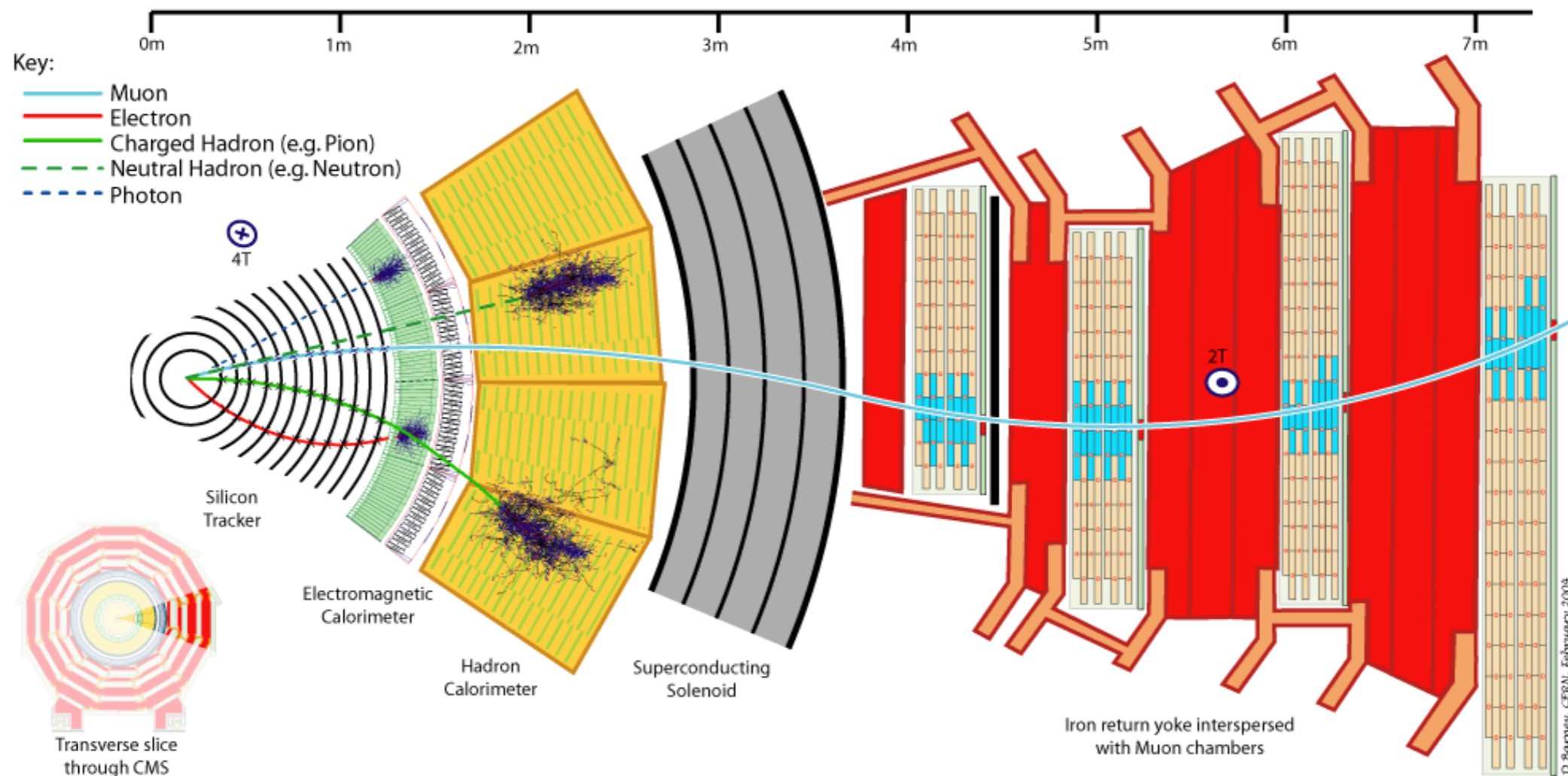
Muon:
passes through CMS,
hits in the tracker and muon chamber
bending in the magnetic field

Electron:
bending in the magnetic field,
hits in the tracker layers
stops in the electromagnetic calorimeter

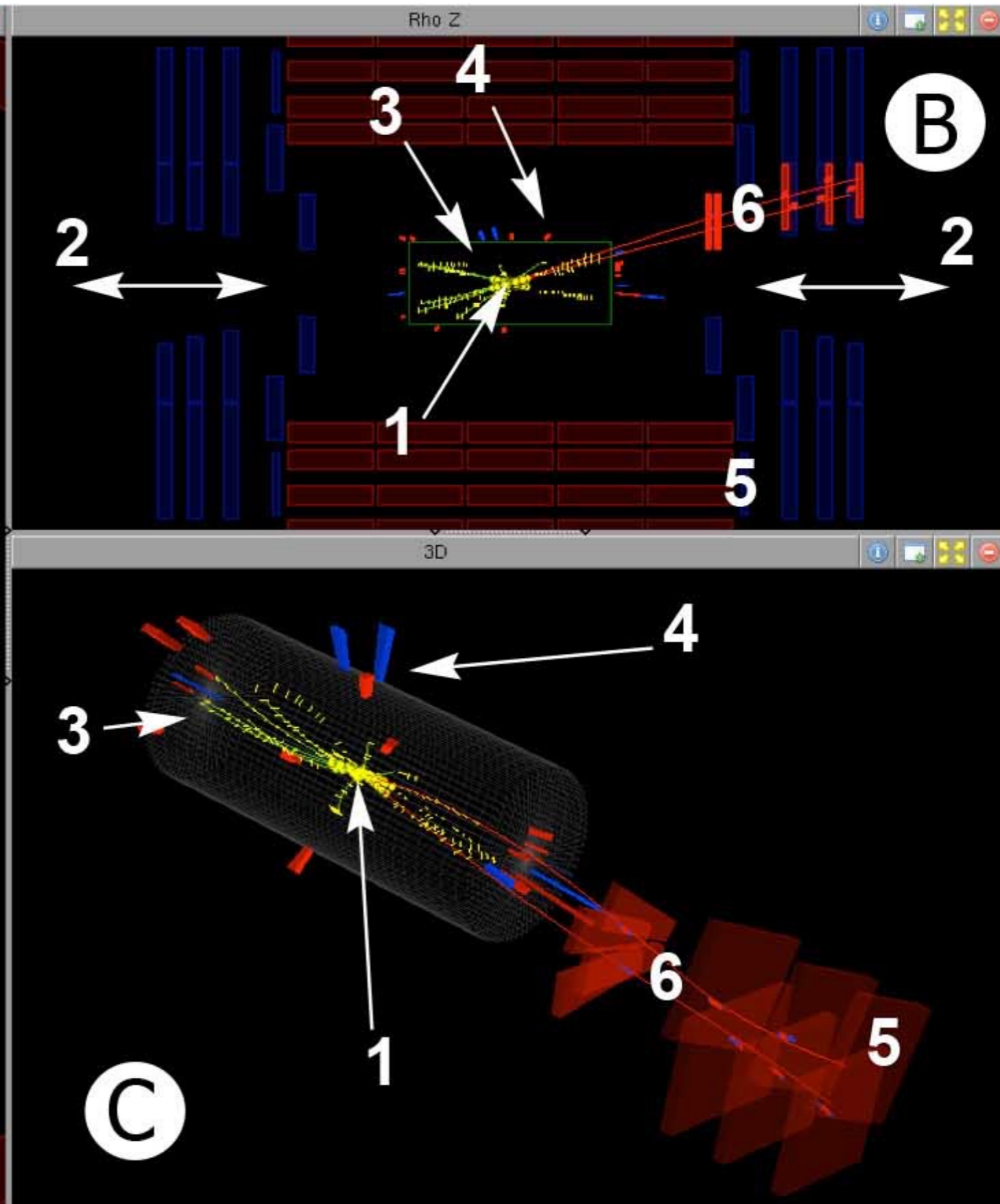
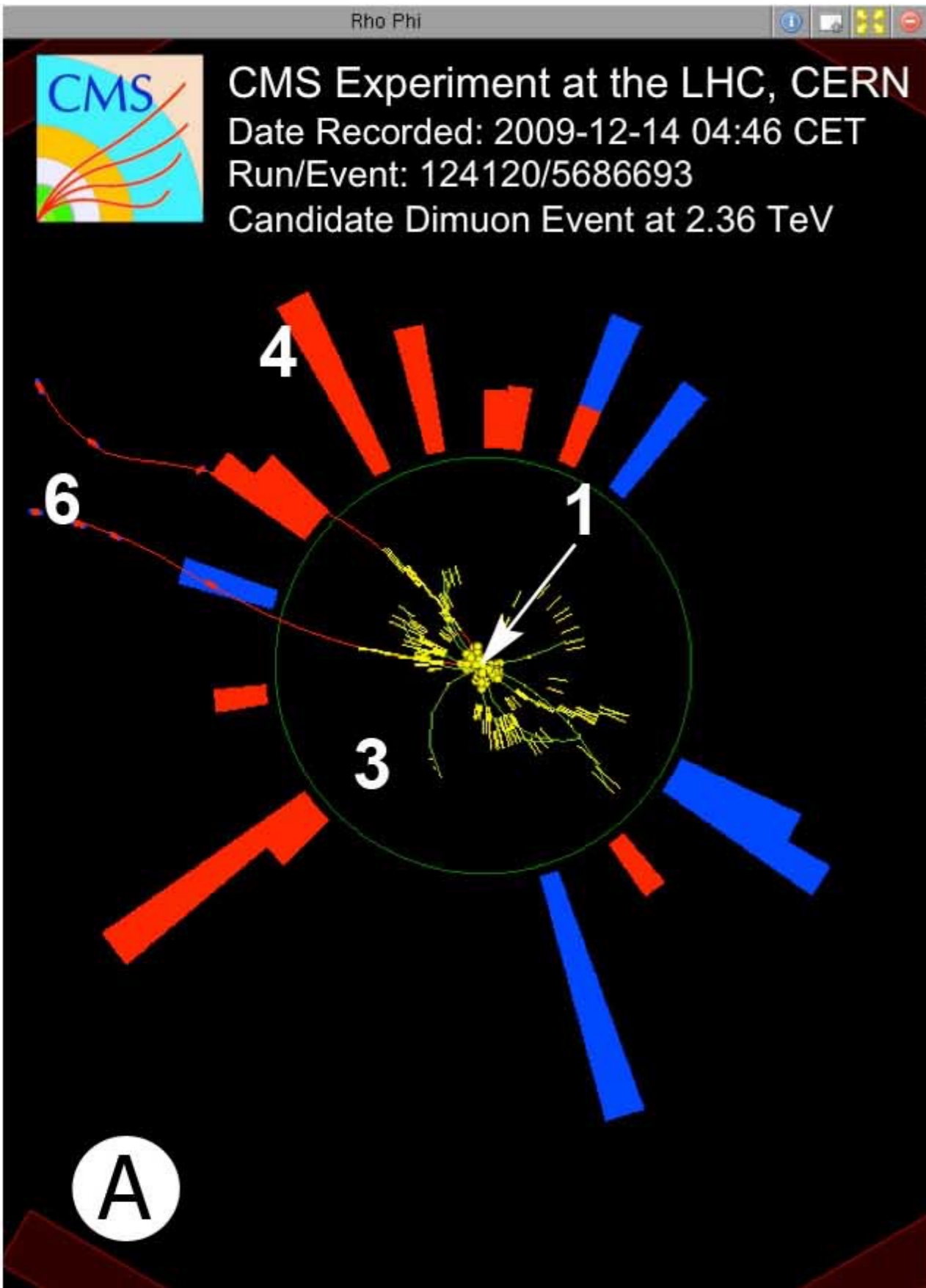
Charged Hadrons:
bending in the magnetic field
signals in the tracker layers
stop in the hadron calorimeter

Neutral Hadron:
stops in the hadronic calorimeter

Photon:
stops in the electromagnetic calorimeter



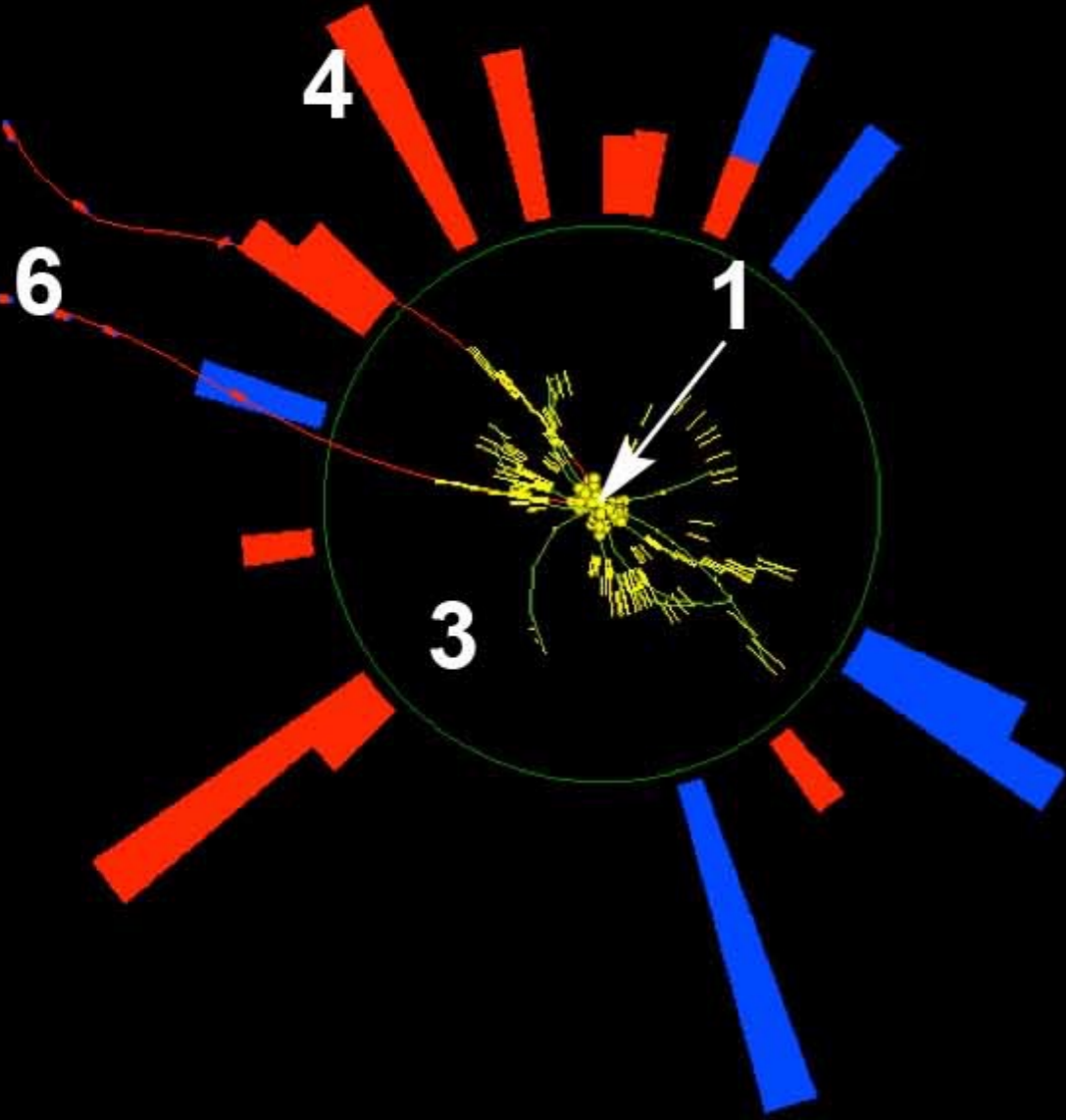
Tek bir olayi inceleyelim : (Bu eski bir olay !)



Tek bir olayi inceleyelim : (Bu eski bir olay !)



CMS Experiment at the LHC, CERN
Date Recorded: 2009-12-14 04:46 CET
Run/Event: 124120/5686693
Candidate Dimuon Event at 2.36 TeV



A

Rho Z

Iki muon olayi ADAY'i

Muonlar beni kandirabilir:

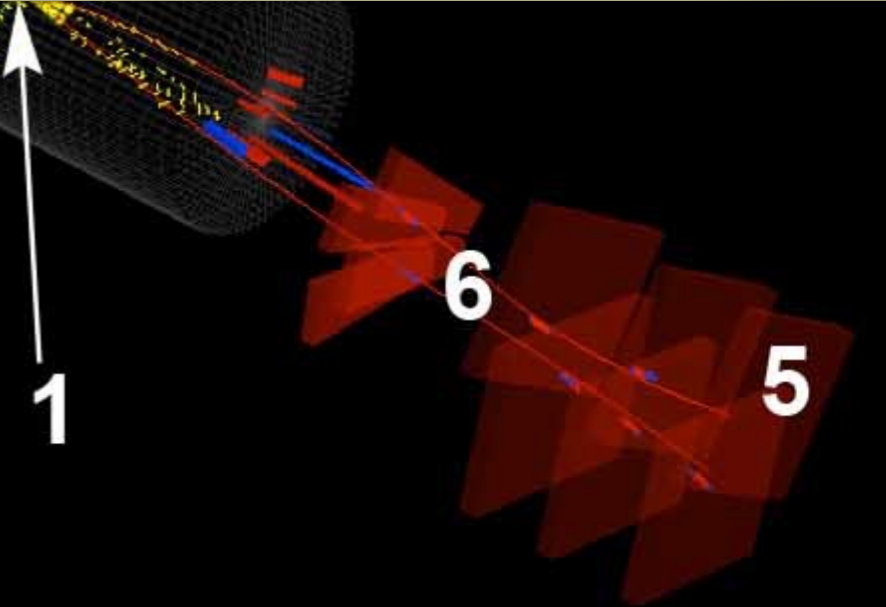
Aslinda Z veya J/Psi bozunmus olabilir.

Ya da iki W ikisi de muon'a bozunmustur.

Muon sandiklarim aslinda muon'a cok benzer baska parcaciklar olabilir. ...

Olaylarin bana fiziksel bir sonuc vermesi icin cok fazla olaya bakmam gerek.

C



Tek bir olayi inceleyelim : (Bu eski bir olay !)

Rho Phi

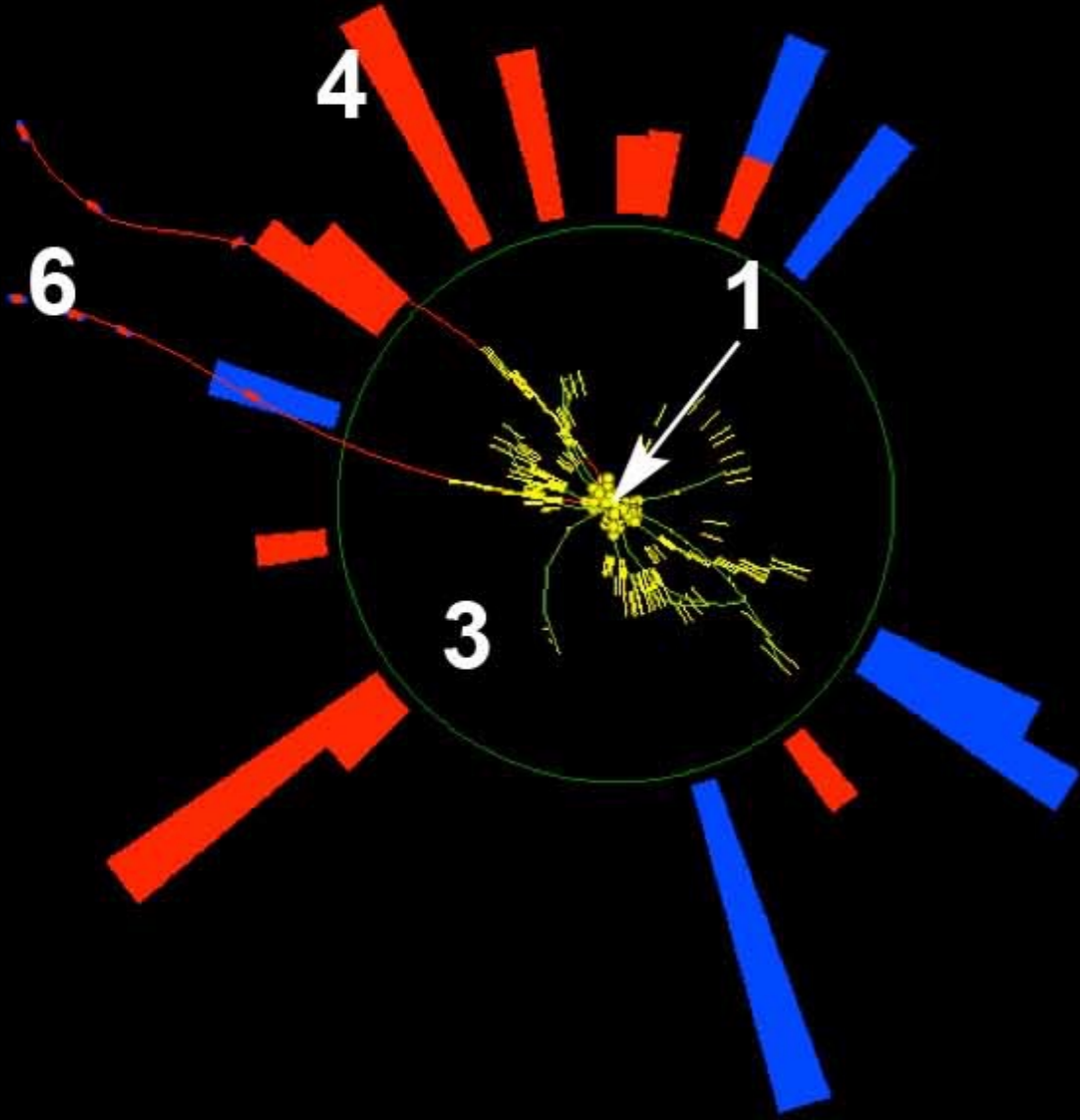


CMS Experiment at the LHC, CERN

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A

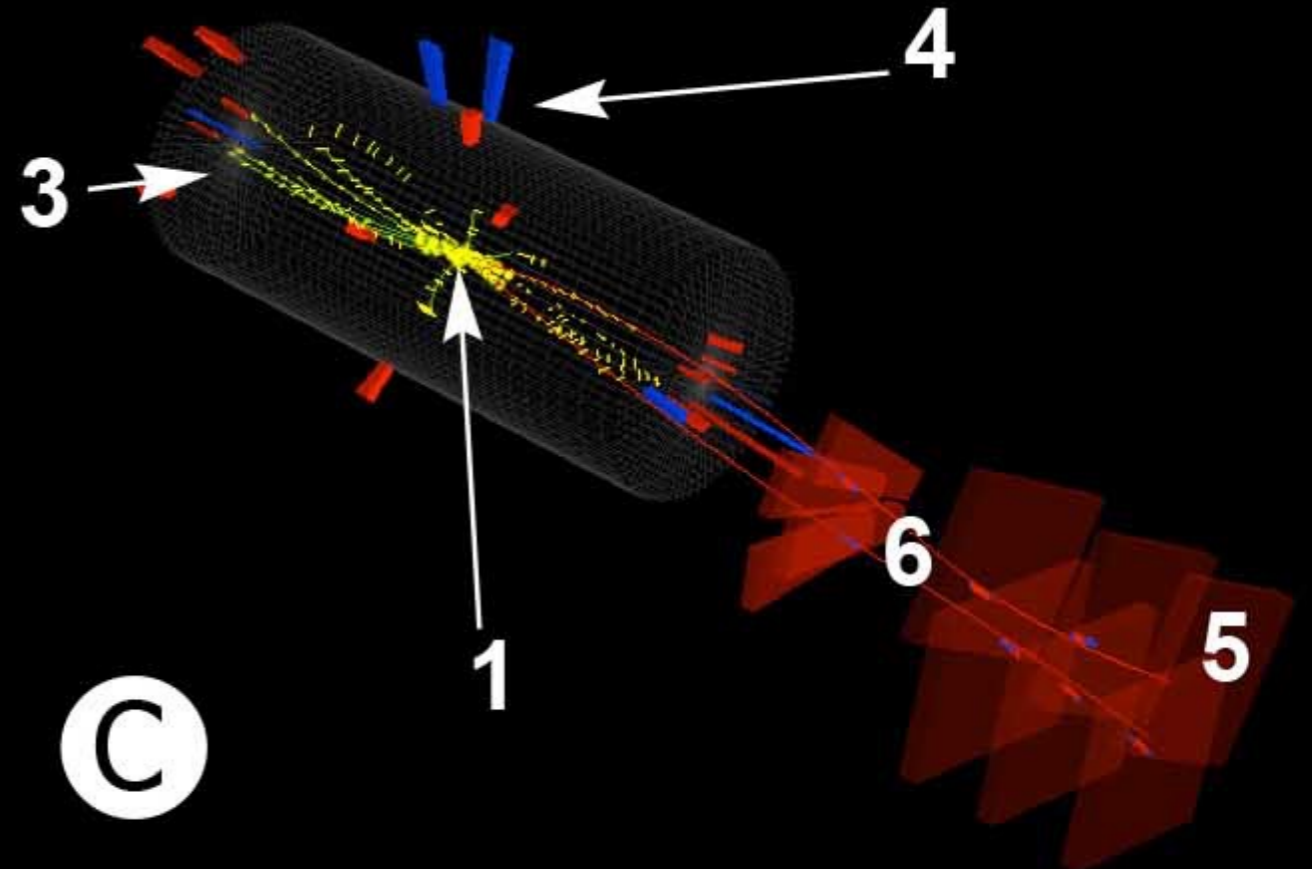
Rho Z

4

A:

bu goruntude demete karsidan bakiyorum.

1 numara bana merkez carpisma noktasini gosteriyor.



C

Tek bir olayi inceleyelim : (Bu eski bir olay !)

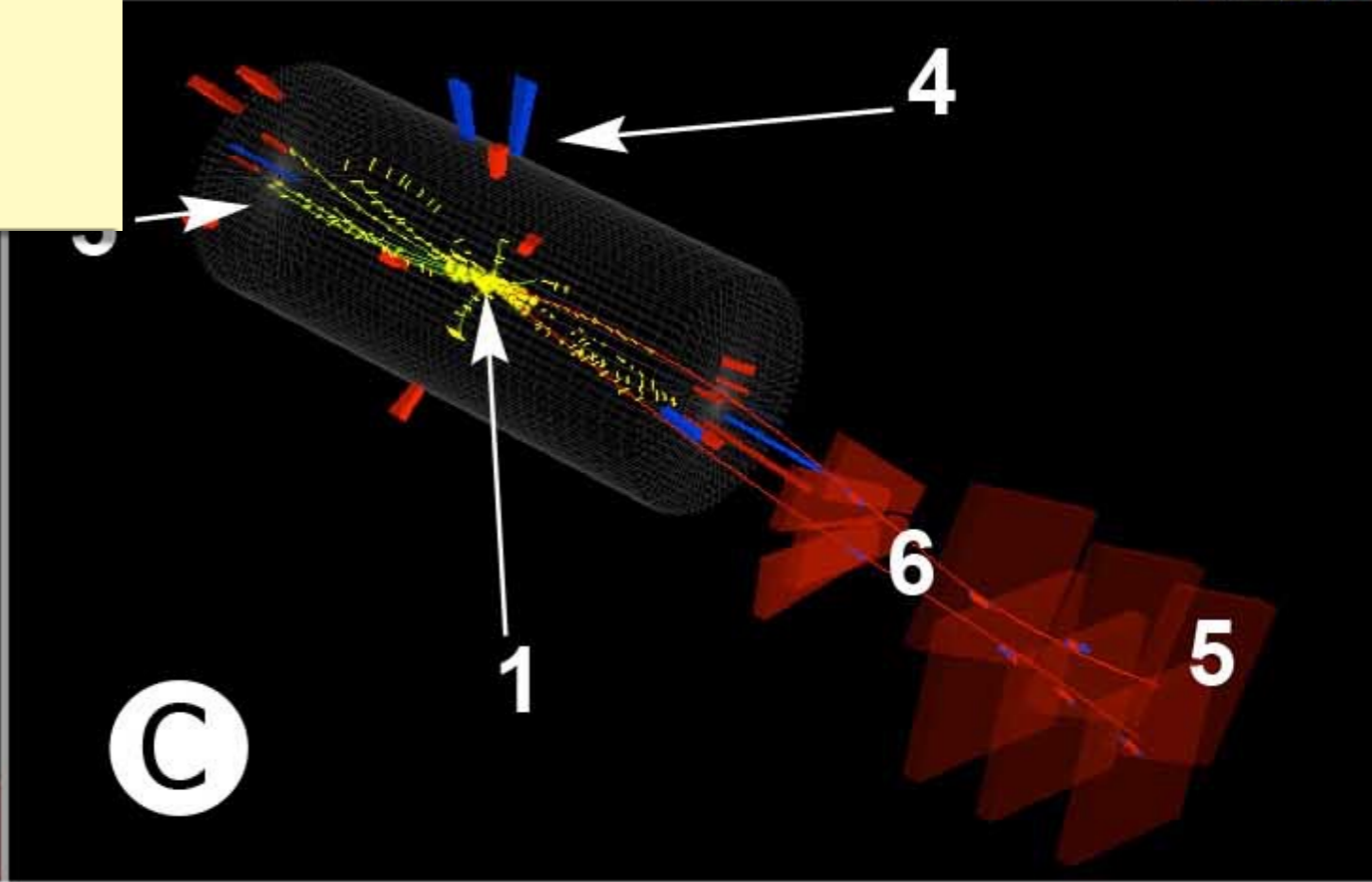
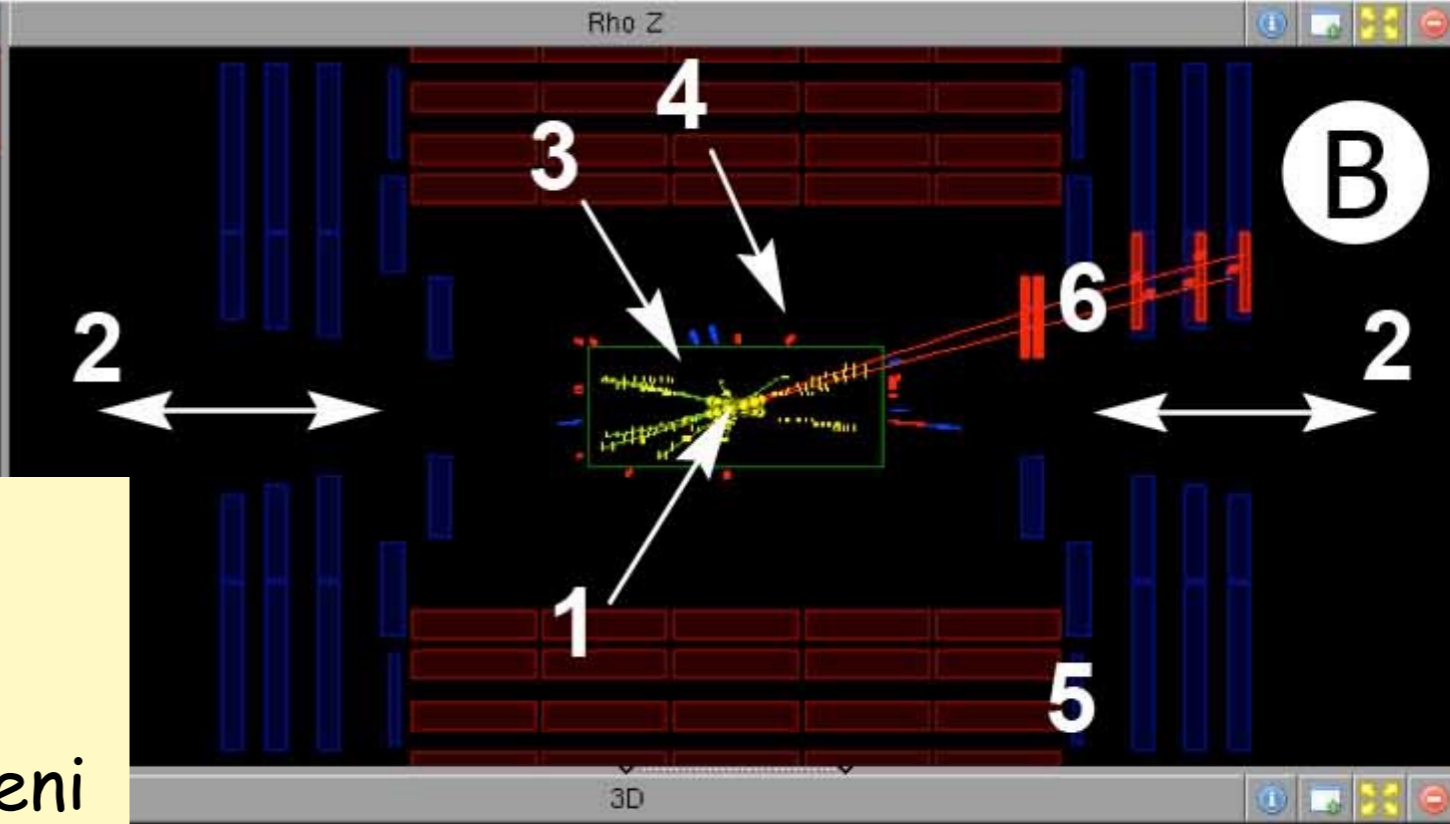
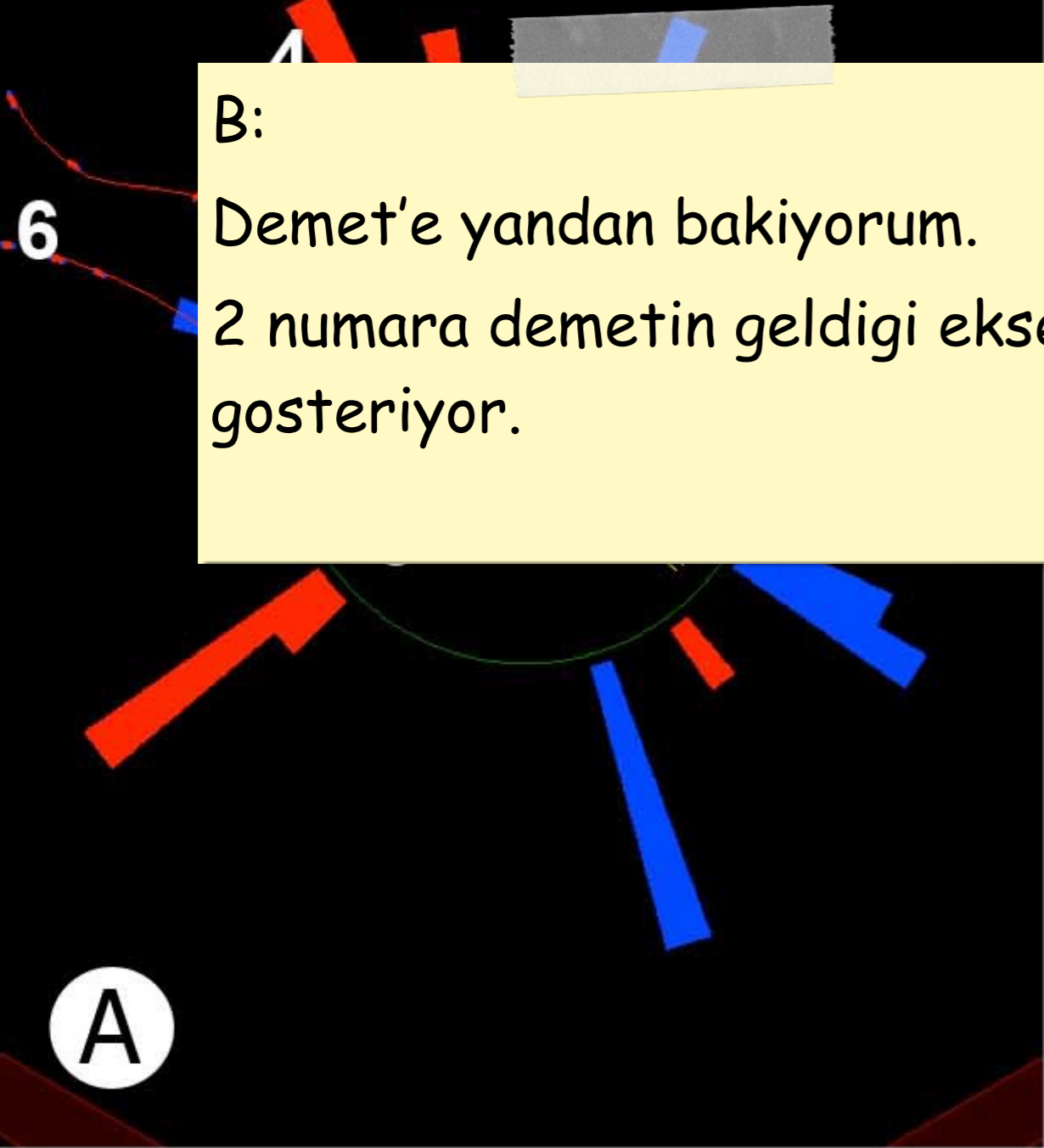


CMS Experiment at the LHC, CERN
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Candidate Dimuon Event at 2.36 TeV

B:

Demet'e yandan bakıyorum.

2 numara demetin geldiği eksenini gösteriyor.



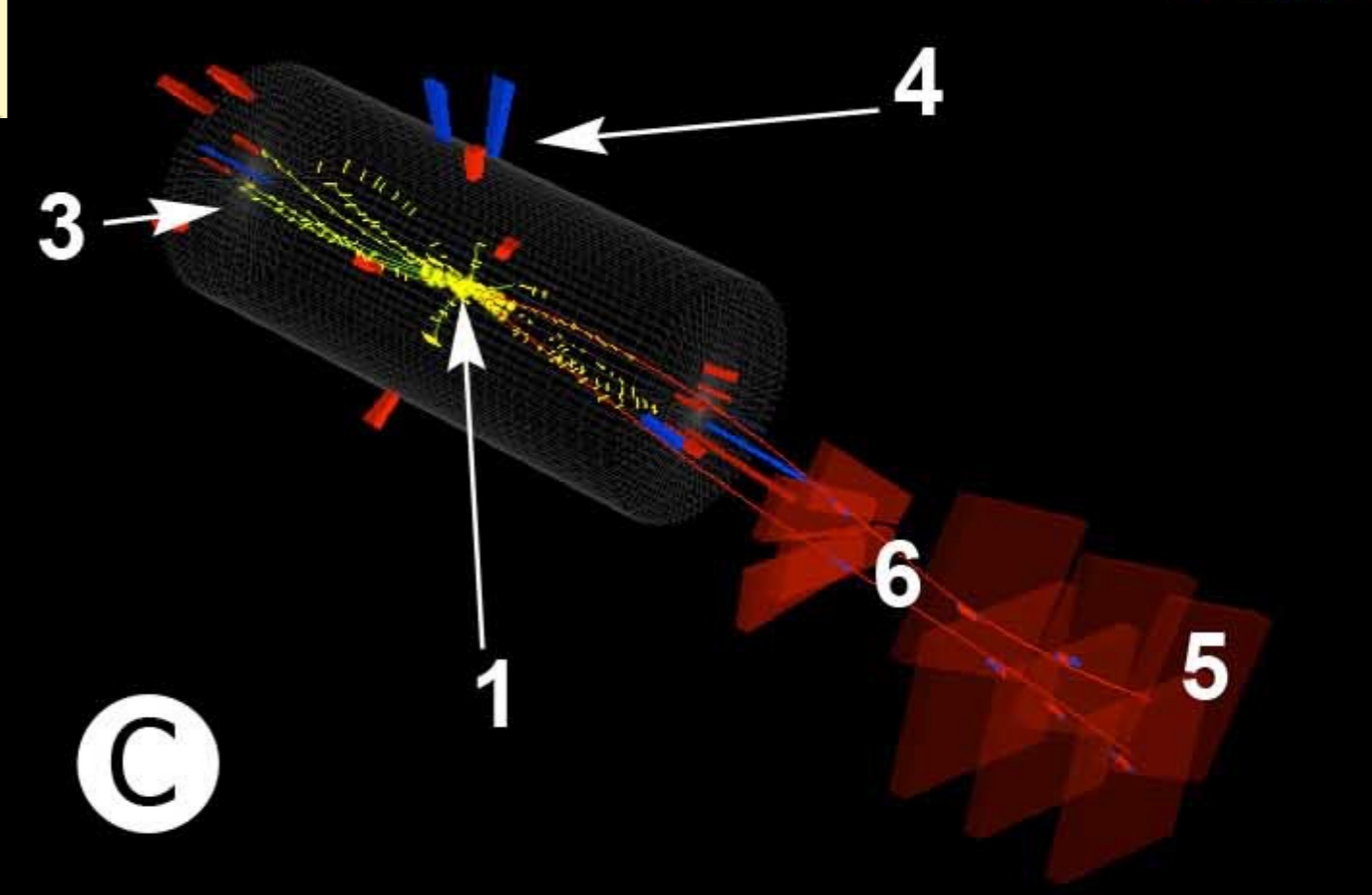
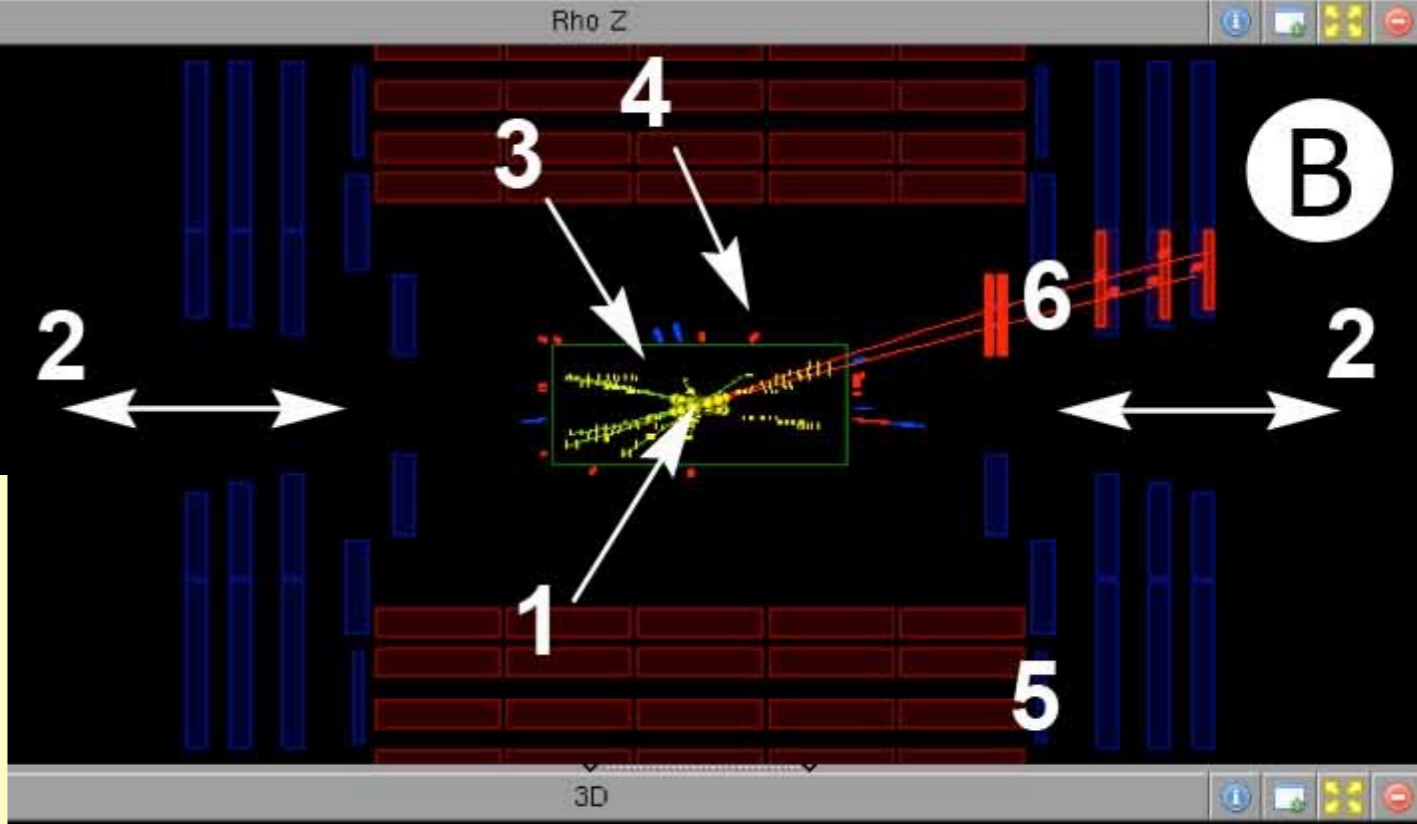
Tek bir olayi inceleyelim : (Bu eski bir olay !)



CMS Experiment at the LHC, CERN
Date Recorded: 2009-12-14 04:46 CET
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Candidate Dimuon Event at 2.36 TeV

C:

demet'e caprazdan bakiyoruz,
bu görüntüyü evirip çevirip
 oynayabiliyoruz.



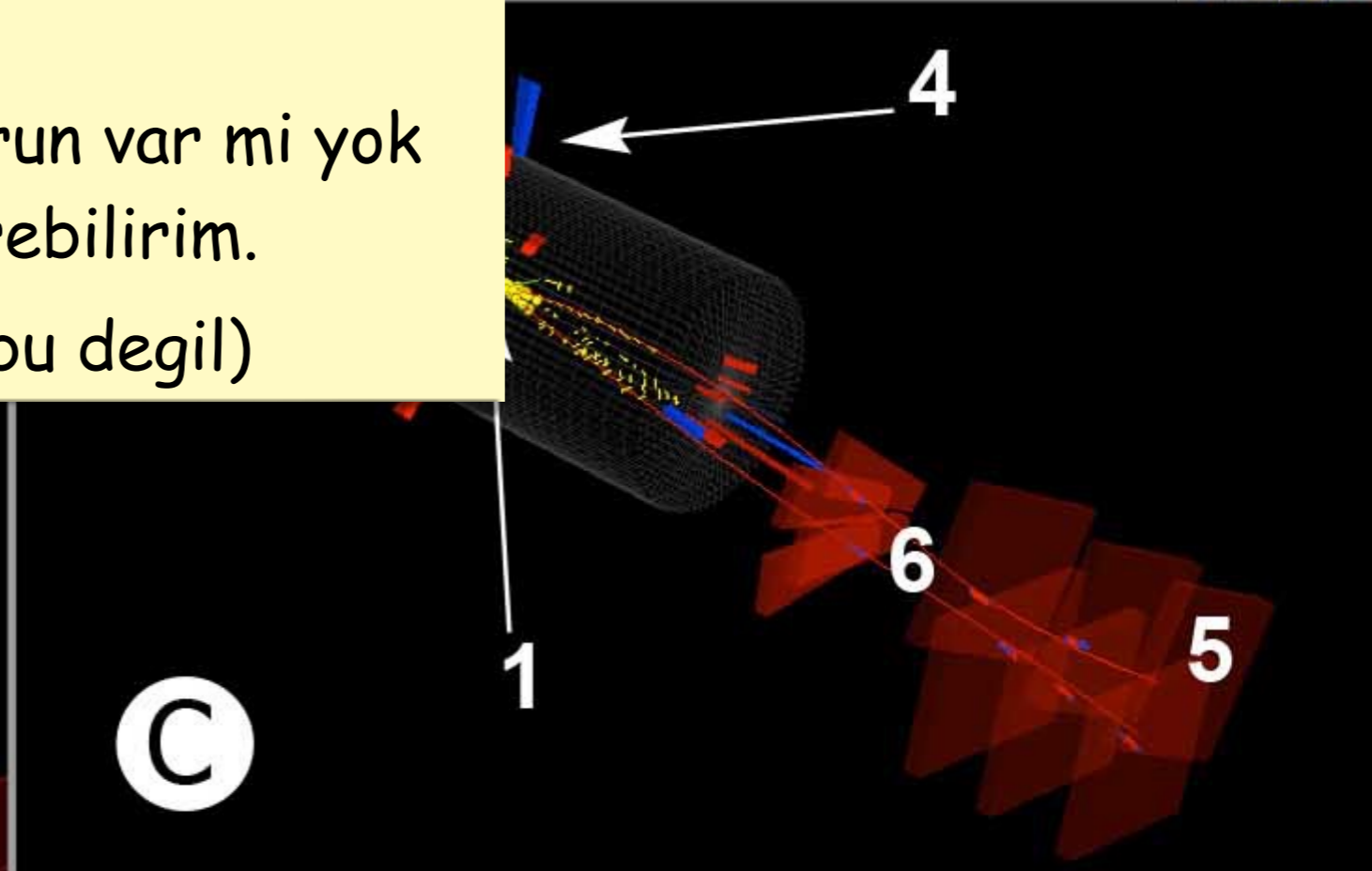
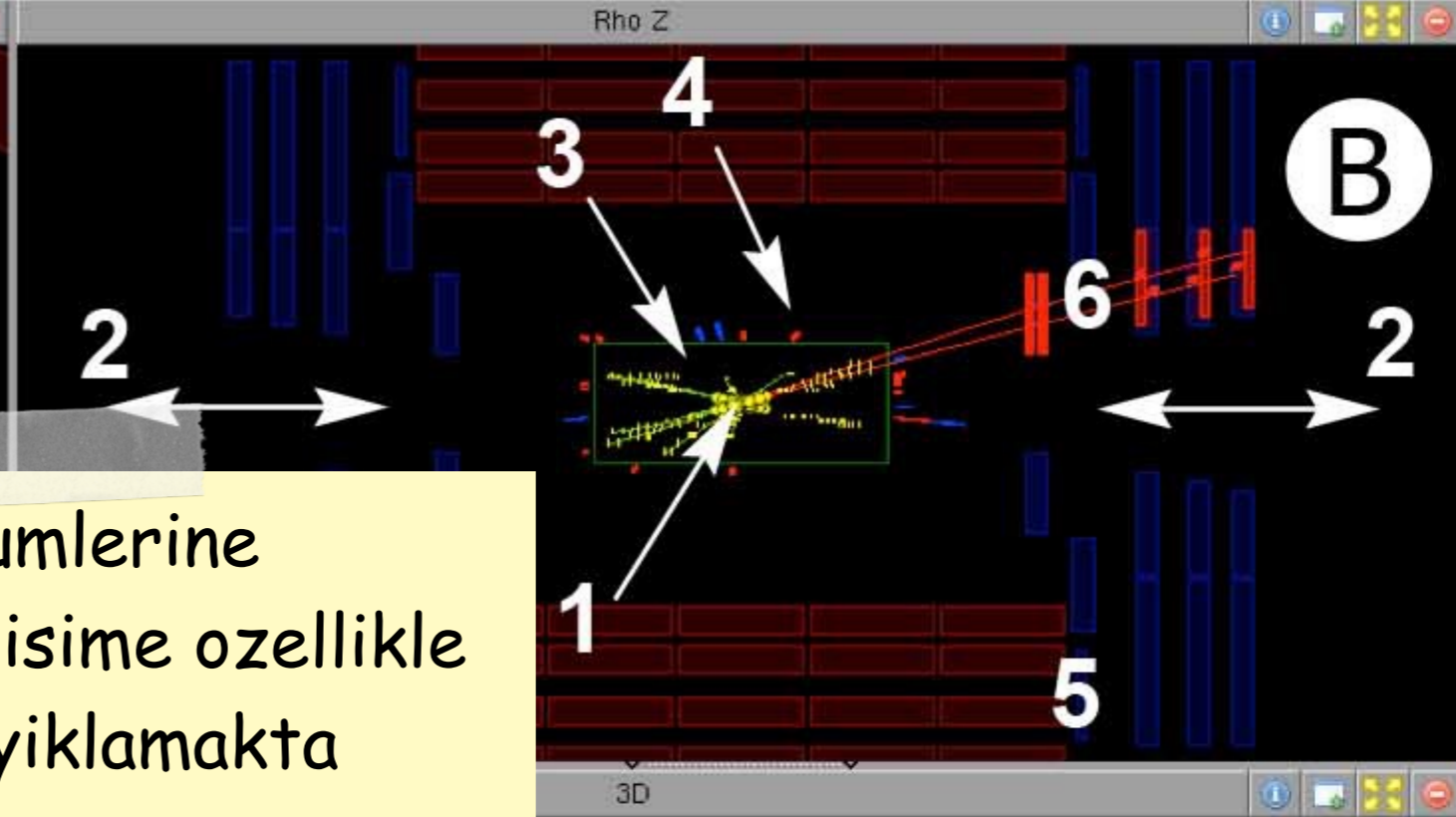
Tek bir olayi inceleyelim : (Bu eski bir olay !)



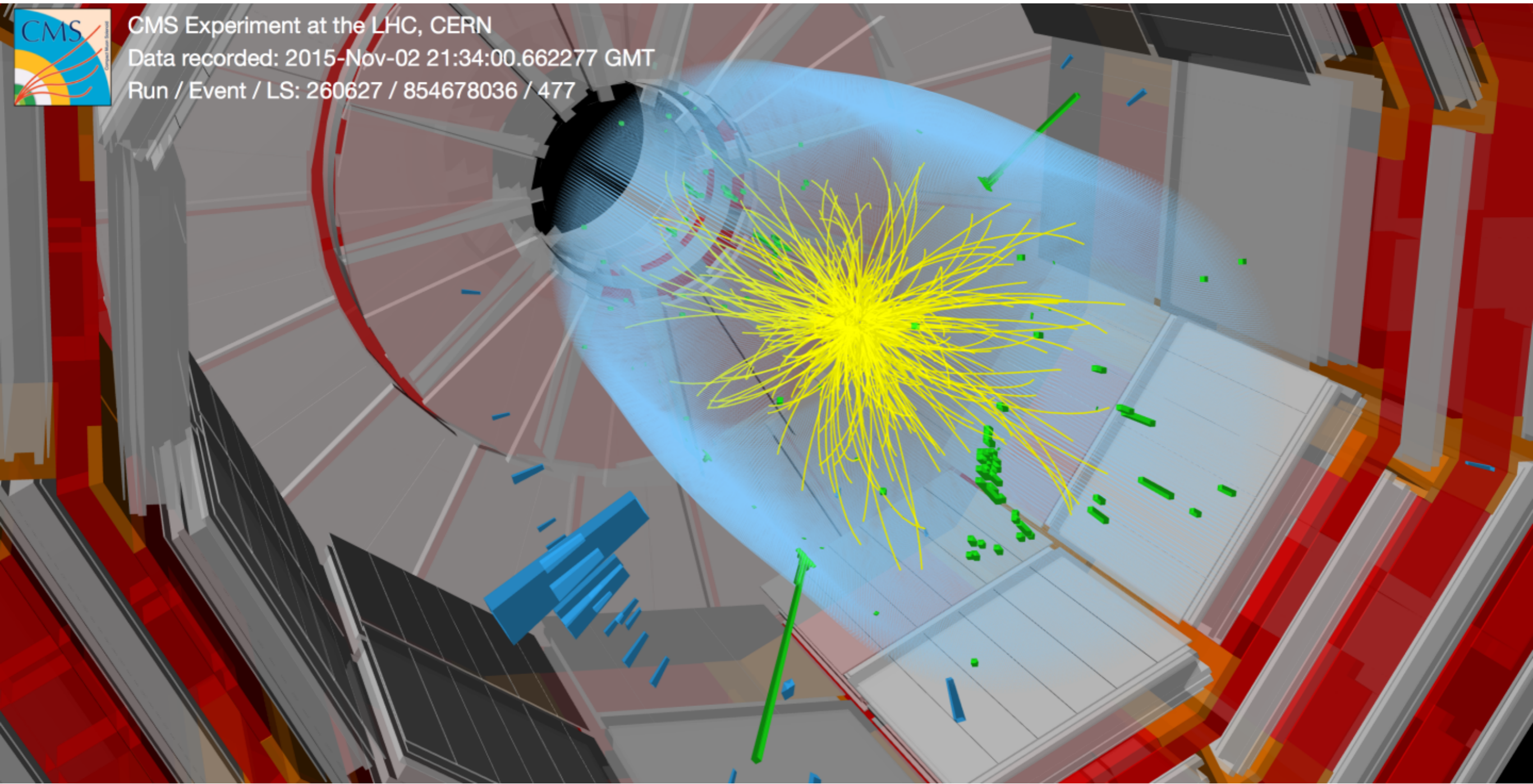
CMS Experiment at the LHC, CERN
Date Recorded: 2009-12-14 04:46 CET
Run/Event: 124120/5686693
Candidate Dimuon Event at 2.36 TeV



Bu Olay gorunumlerine bakmak benim isime ozellikle kotu olaylari ayiklamakta yariyor.
Algic'ta bir sorun var mi yok buralardan gorebilirim.
(Tabii tek yol bu degil)



di-photon event recorded by CMS (Run 2, 13 TeV)



CMS Experiment at the LHC, CERN

Data recorded: 2015-Nov-02 21:34:00.662277 GMT

Run / Event / LS: 260627 / 854678036 / 477

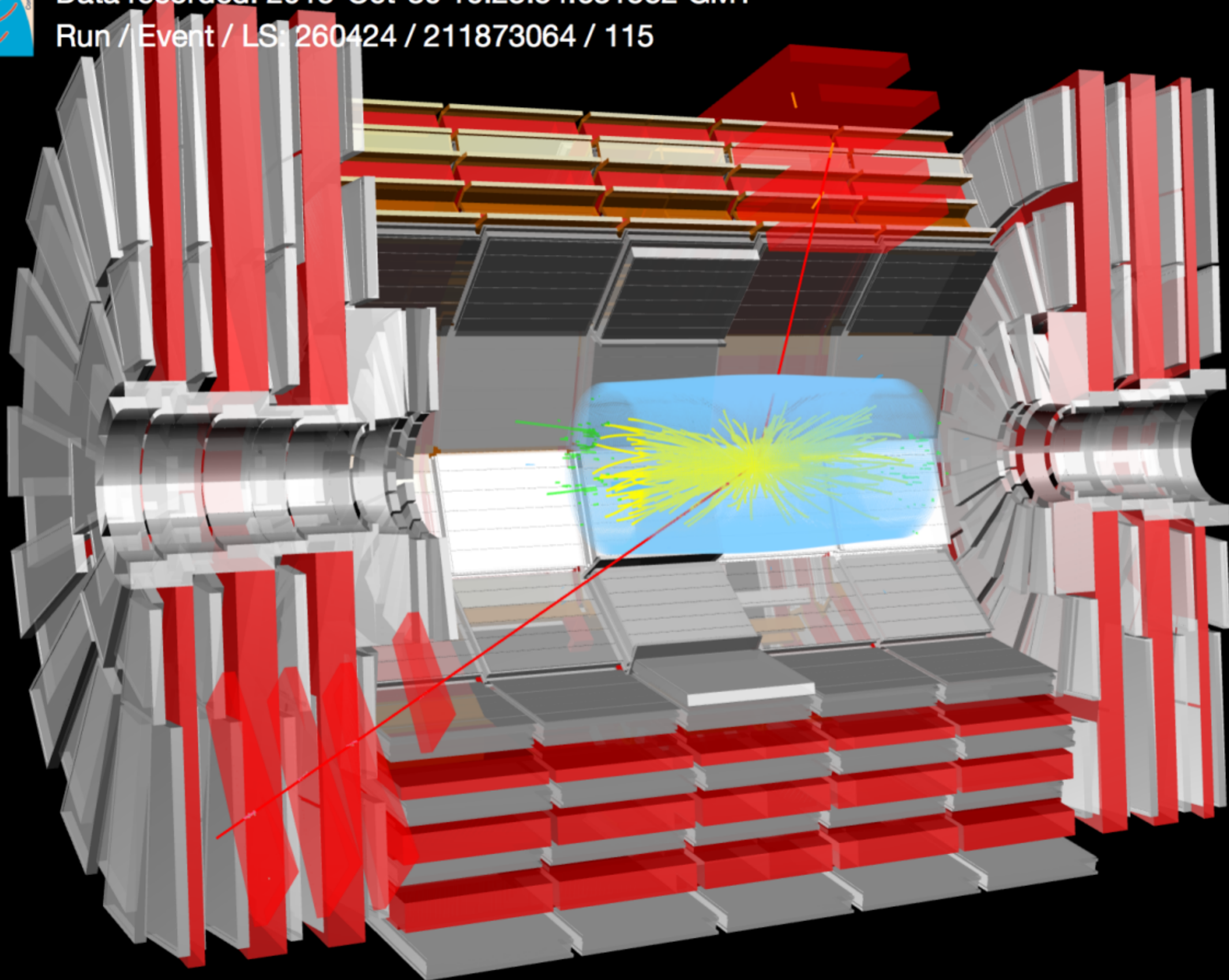
di-muon event recorded by CMS (Run 2, 13 TeV)



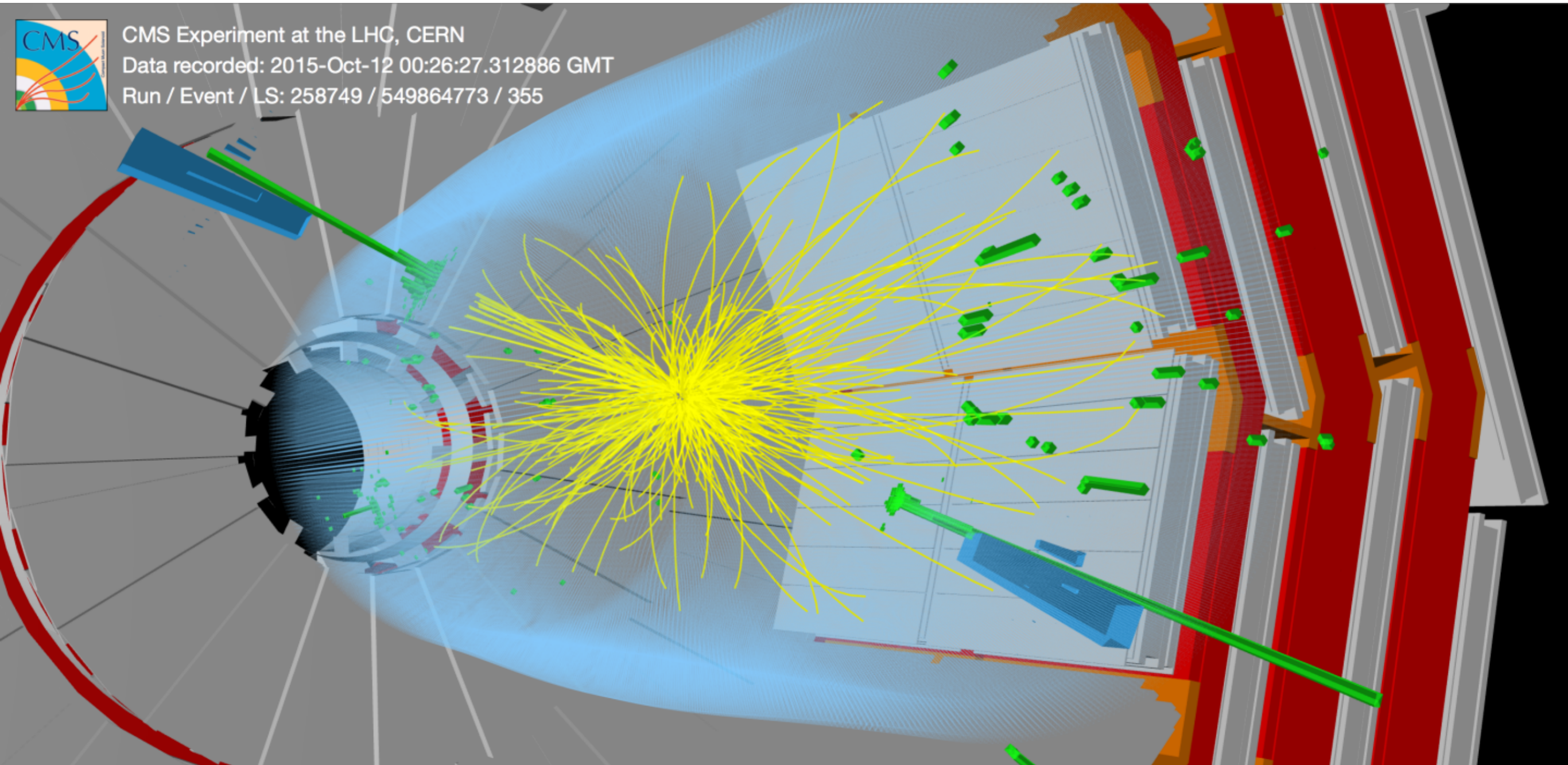
CMS Experiment at the LHC, CERN

Data recorded: 2015-Oct-30 19:23:54.631552 GMT

Run / Event / LS: 260424 / 211873064 / 115



di-Jet event recorded by CMS (Run 2, 13 TeV)



CMS Experiment at the LHC, CERN
Data recorded: 2015-Oct-12 00:26:27.312886 GMT
Run / Event / LS: 258749 / 549864773 / 355

Bazı yardımcı bilgiler burada bulunabilir:

http://atlas.physicsmasterclasses.org/tr/zpath_messung.htm

PDG kinematics unitesi güzel :

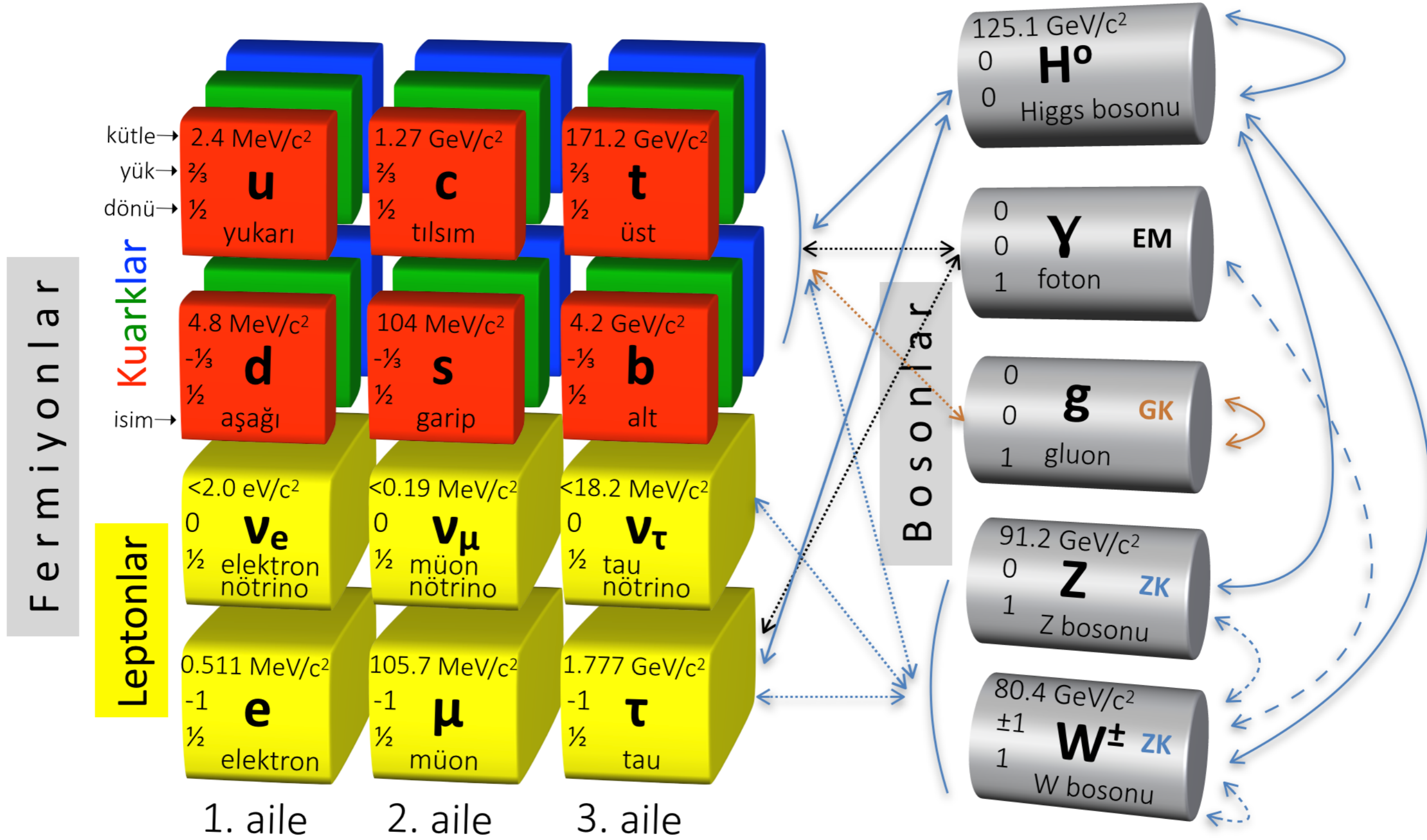
<http://pdg.lbl.gov/2014/reviews/rpp2014-rev-kinematics.pdf>

▶ **ROOT TLorentzVector sınıfı:**

<https://root.cern.ch/doc/master/classTLorentzVector.html>

Ek Sayfalar

SM Parçacıkları



git

install git: <https://git-scm.com/book/en/v2/Getting-Started-Installing-Git>

```
pc00:HUPP eceasilar$ git init
```

```
Initialized empty Git repository in /Users/eceasilar/HUPP/.git/
```

```
pc00:HUPP eceasilar$ git remote add hupp-central https://github.com/easilar/HUPP-codeHelper
```

```
pc00:HUPP eceasilar$ git remote show
```

```
hupp-central
```

Bu ismi biz uydurduk

```
pc00:HUPP eceasilar$ git fetch hupp-central
```

```
remote: Counting objects: 24, done.
```

```
remote: Compressing objects: 100% (16/16), done.
```

```
remote: Total 24 (delta 6), reused 0 (delta 0), pack-reused 0
```

```
Unpacking objects: 100% (24/24), done.
```

```
From https://github.com/easilar/HUPP-codeHelper
```

```
* [new branch]      master    -> hupp-central/master
```

```
pc00:HUPP eceasilar$ git branch
```

Henüz bir dal'imiz yok

```
pc00:HUPP eceasilar$ git checkout -b master-hupp
```

"-b" yeni dal yaptik. Dal'in adi master-huppp

```
Switched to a new branch 'master-hupp'
```

```
pc00:HUPP eceasilar$ git branch
```

gorebilmek icin once dal'imizi git havuzuna atmaliz

```
pc00:HUPP eceasilar$ git push hupp-central master-hupp
```

Boyle hemen atamayiz once aticam sozu vermeliyim git'e

git

Bir dosya olusturup bunu yeni dal'imiz ile birlikte git'a gonderelim.

```
pc00:HUPP eceasilar$ vi analysisSimple.py
pc00:HUPP eceasilar$
pc00:HUPP eceasilar$
pc00:HUPP eceasilar$ git add analysisSimple.py
pc00:HUPP eceasilar$ git commit -am "first file: analysisSimple.py"
[master-hupp (root-commit) aa61545] first file: analysisSimple.py
Committer: ece asilar <eceasilar@pc00.idemog.oeaw.ac.at>
[...Biraz daha fazla ileti...]
pc00:HUPP eceasilar$
pc00:HUPP eceasilar$ git push hupp-central master-hupp
Username for 'https://github.com': easilar
Password for 'https://easilar@github.com':
Counting objects: 3, done.
Delta compression using up to 4 threads.
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 532 bytes | 0 bytes/s, done.
Total 3 (delta 0), reused 0 (delta 0)
To https://github.com/easilar/HUPP-codeHelper
 * [new branch] master-hupp -> master-hupp
pc00:HUPP eceasilar$
pc00:HUPP eceasilar$ git branch
* master-hupp
pc00:HUPP eceasilar$
```

Dosyami actim , kaydettim.

git havuzuna ekledim
Ve git'e bunu bildirdim

Simdi olusturdugum dal'i git'e gonderebilirim.
bildirdigim tum degisiklikleri
git'e tasiyacak.

Yuklemek icin git
kullanici adimi ve
sifremi istedi.

Artik hersey git havuzunda,
bana bulundugum dal'i gosteriyor.

.bash_profile

```
###Python and ROOT setting
export ROOTSYS=/cern/newROOT/root/
#export PYTHONPATH=/usr/bin/python
export PYTHONPATH=$ROOTSYS/lib:$PYTHONPATH
#export LD_LIBRARY_PATH=$ROOTSYS/lib:$LD_LIBRARY_PATH
export LD_LIBRARY_PATH=$ROOTSYS/lib:$PYTHONDIR/lib:$LD_LIBRARY_PATH
export DYLD_LIBRARY_PATH=$ROOTSYS/lib:$DYLD_LIBRARY_PATH
export PATH=$ROOTSYS/bin:$PATH

export PATH=$PATH:/usr/local/bin:/usr/X11R6/bin
export CFLAGS="-I/usr/local/include"
export CPPFLAGS="-I/usr/local/include"
export LDFLAGS="-L/usr/local/lib"

#history search
bind "^[[4~":end-of-line
bind "^[[1~":beginning-of-line
bind "^[[3~":delete-char
bind "\e[5~":history-search-backward
bind "\e[6~":history-search-forward

if [[ $- == *i* ]]
then
    bind "\e[A": history-search-backward'
    bind "\e[B": history-search-forward'
fi

##Some useful alias
alias ll='ls -la'
alias ..='cd ..'
alias ...='cd ../..'
alias ....='cd ../../..'
alias hupp='cd /Users/eceasilar/HUPP/analysis/'
```