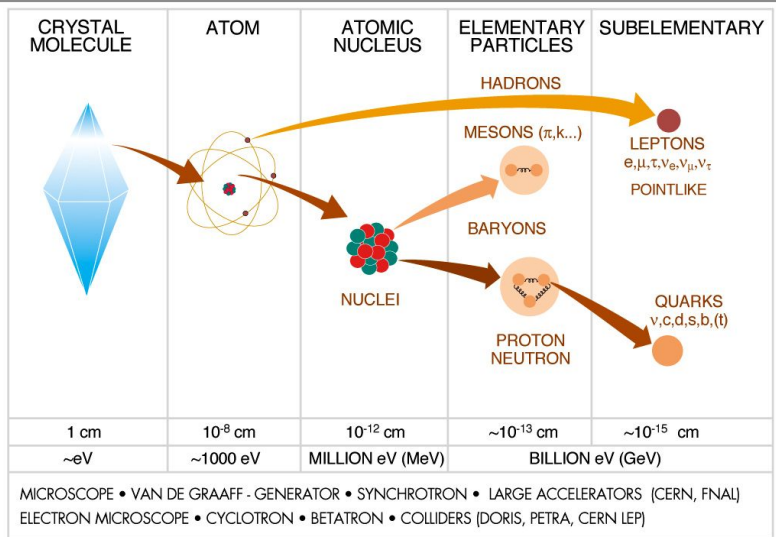


Systematic study of the structure of b and $b\bar{}$ jets at low P_T

Authors: Tomas Sosa Giraldo, Juan José Montoya & José David Ruiz
Speakers: Tomas Sosa Giraldo, Juan José Montoya

Standard Model

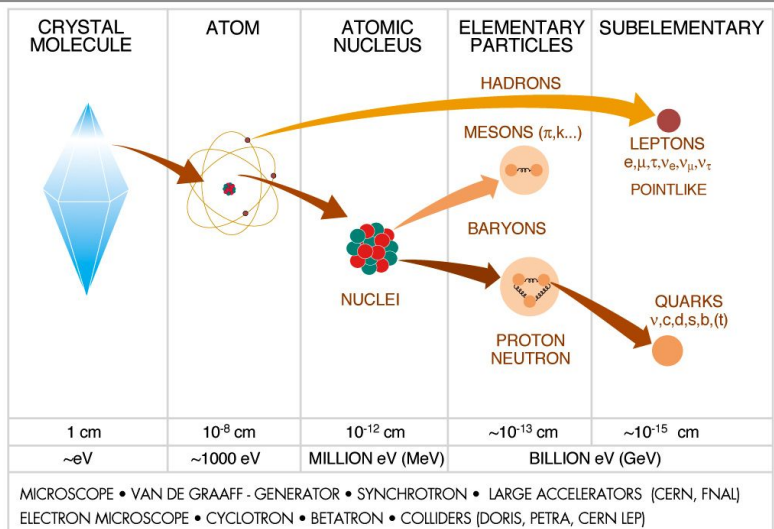
DIFFERENT SCALING STRUCTURE OF MATTER



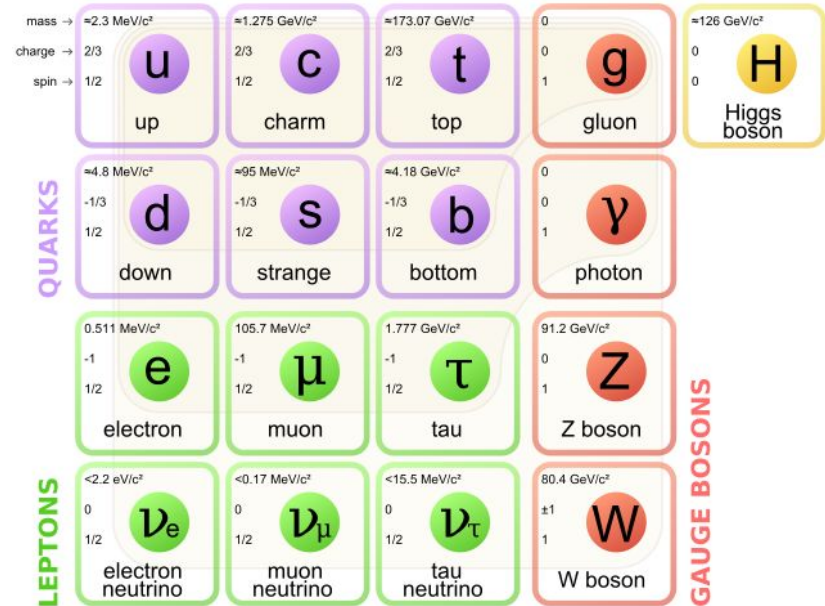
CERN AC_Z14_5/11/92

Standard Model

DIFFERENT SCALING STRUCTURE OF MATTER



CERN AC_Z14_5/11/92



Tools



ROOT

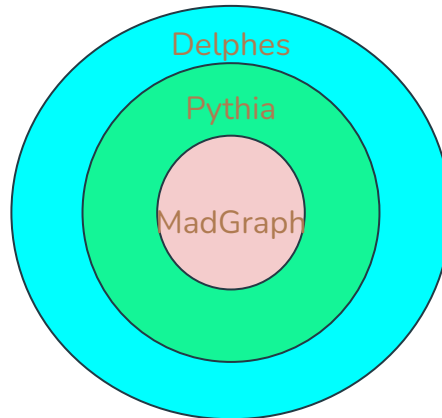
Data Analysis Framework

Tools

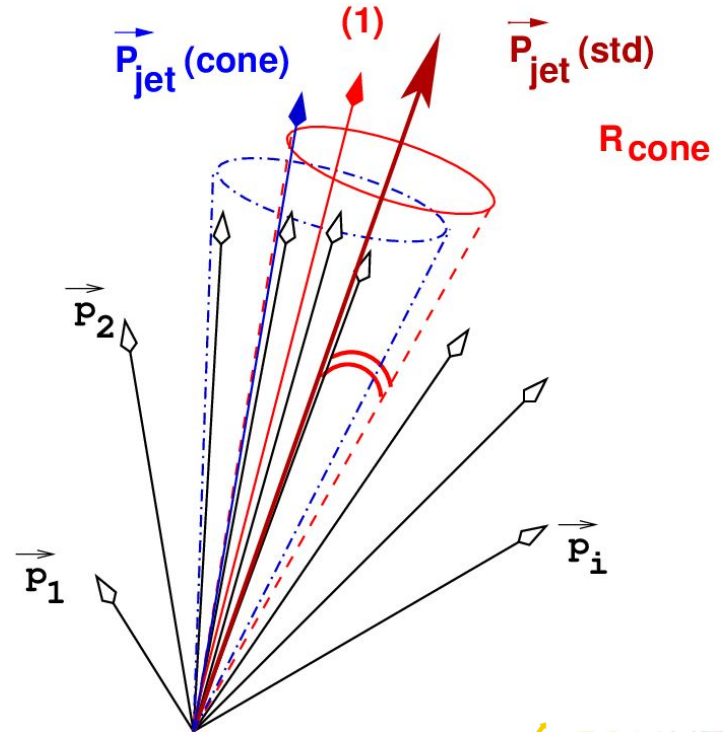
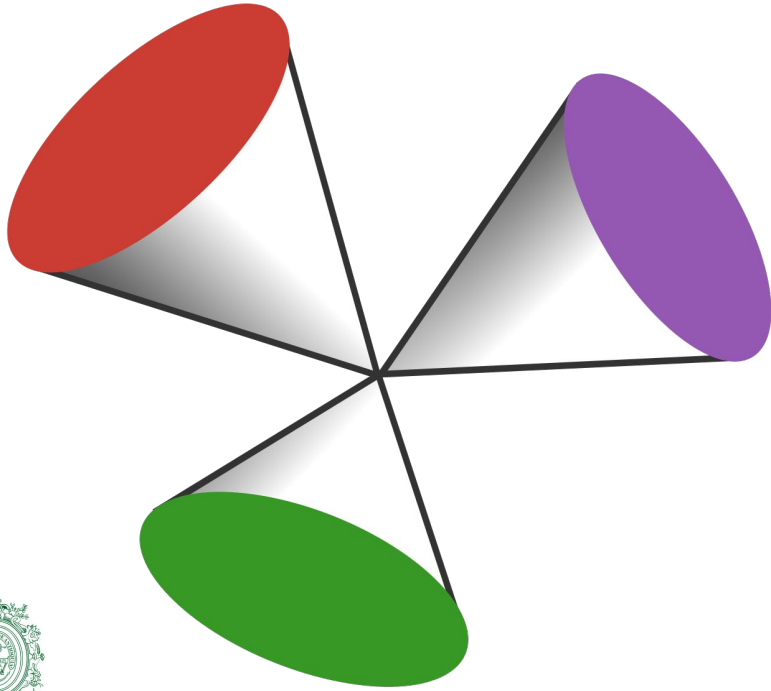


ROOT

Data Analysis Framework



Jets



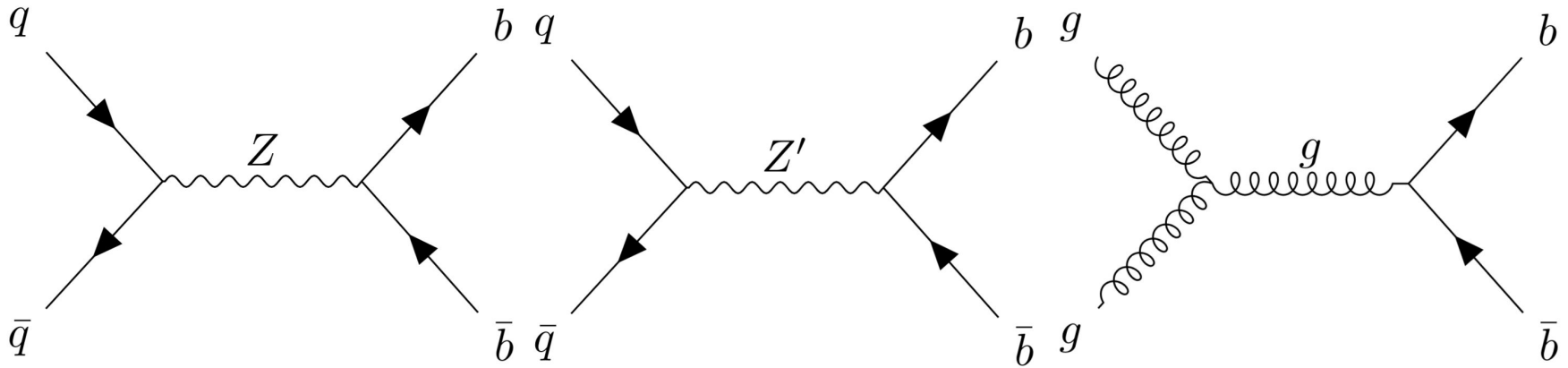
Research

Algorithm

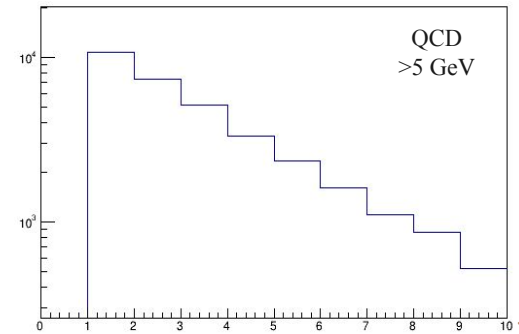
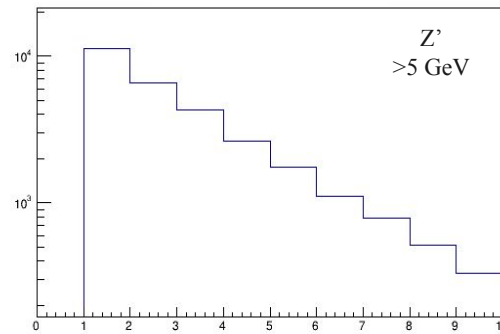
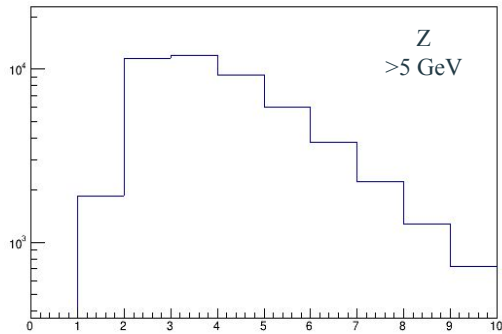
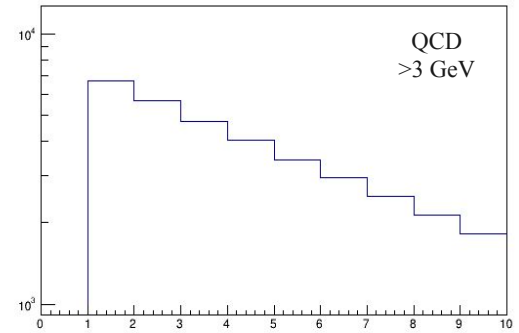
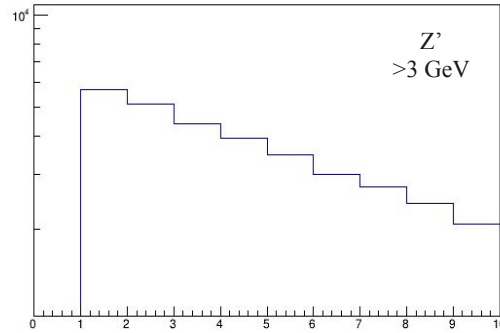
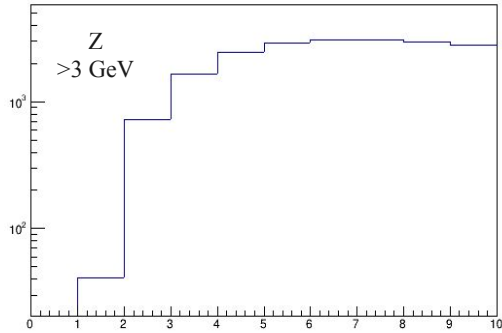
The algorithm to reconstruct jets
is called Anti-KT,
with a radio of 0.4 (AK4)

$$R = \sqrt{\Delta\eta^2 + \Delta\phi^2}$$

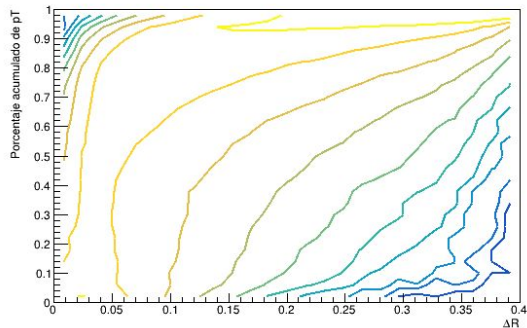
Processes



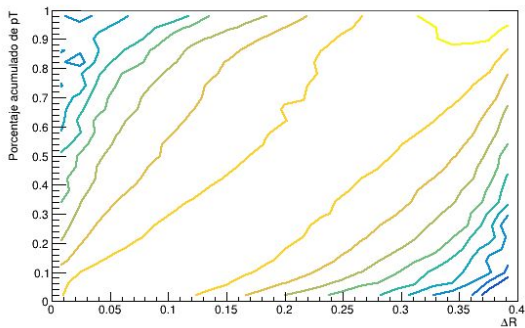
Jets per event



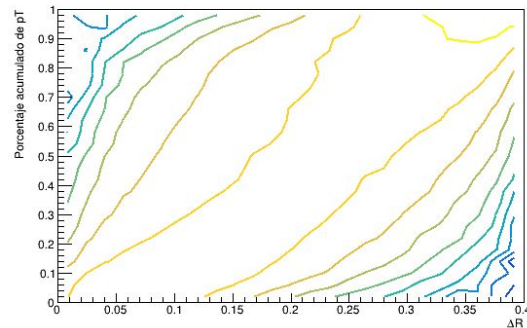
Accumulated PT vs ΔR



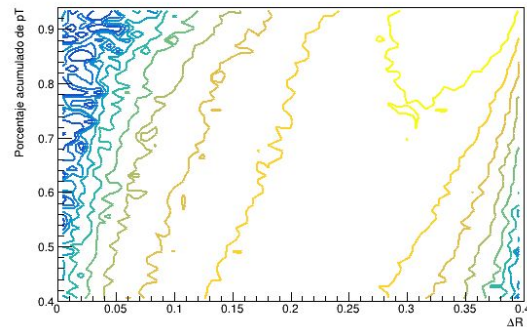
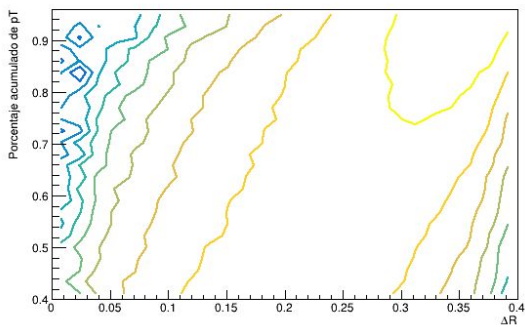
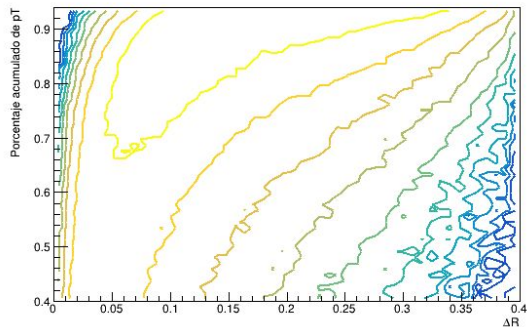
Z



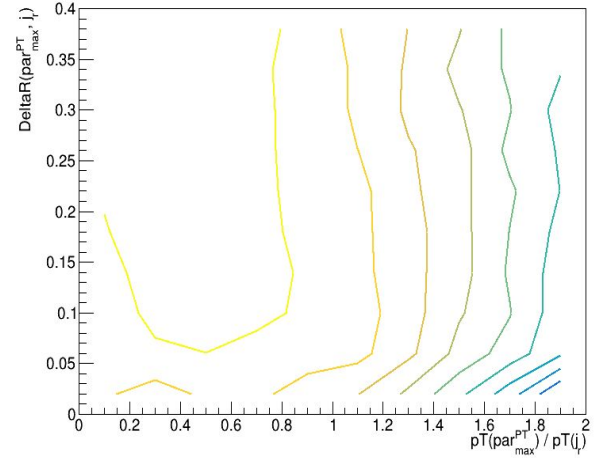
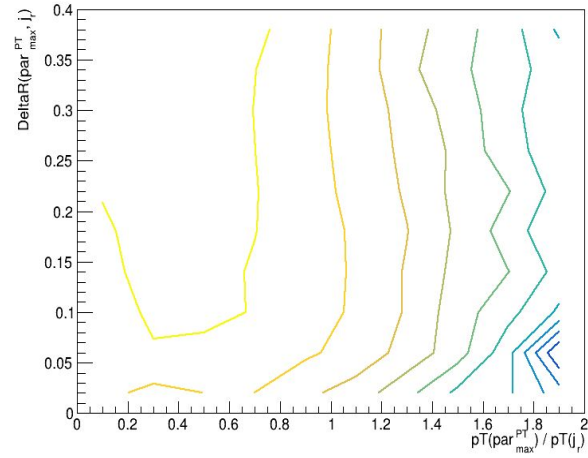
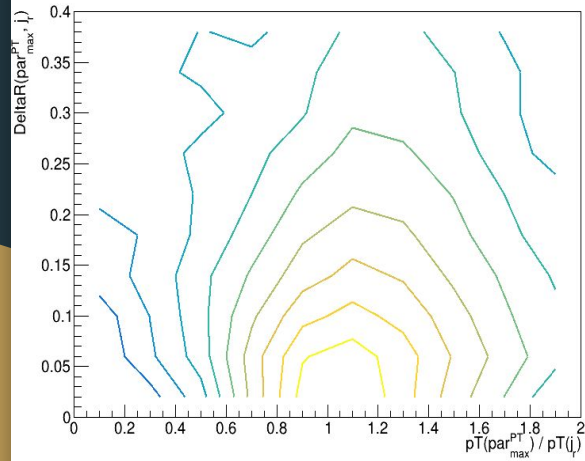
Z'



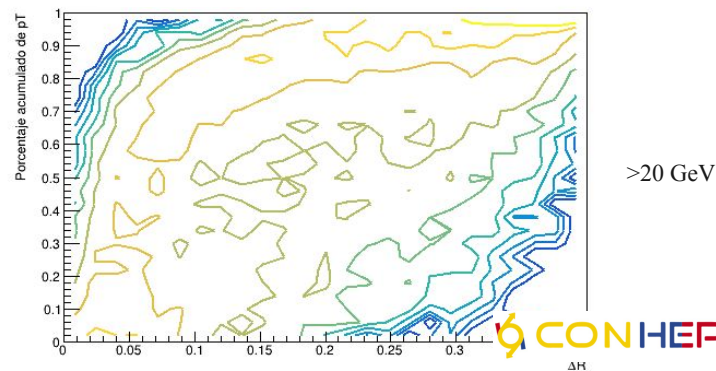
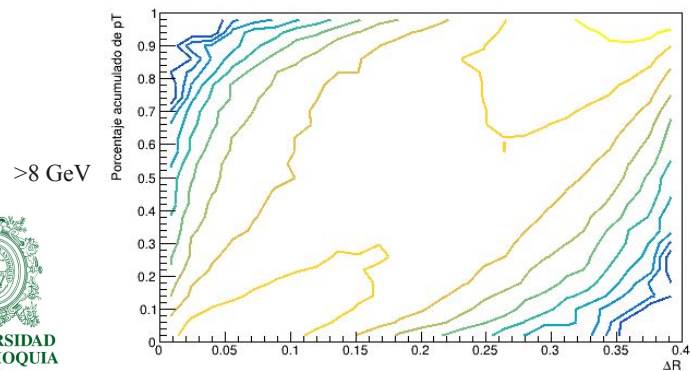
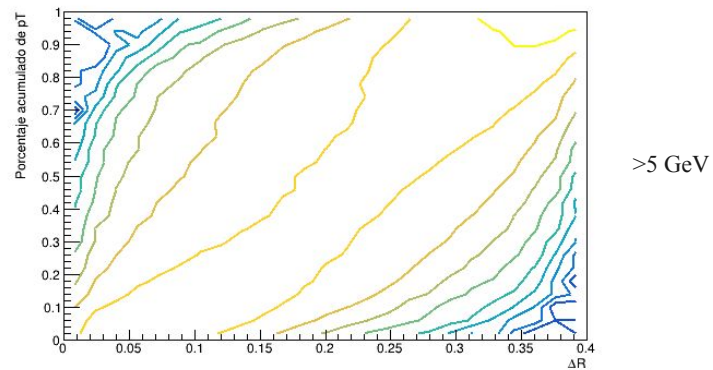
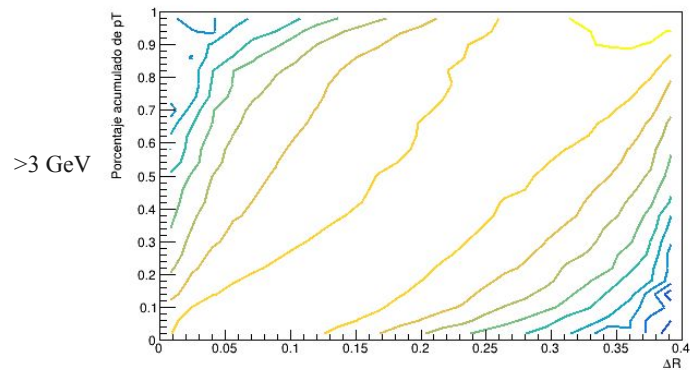
QCD



Max PT ratio vs ΔR

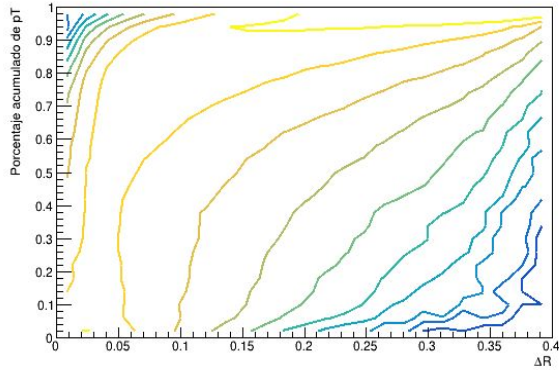


QCD

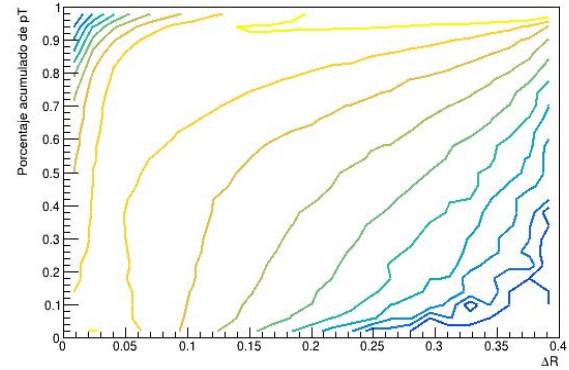


Z

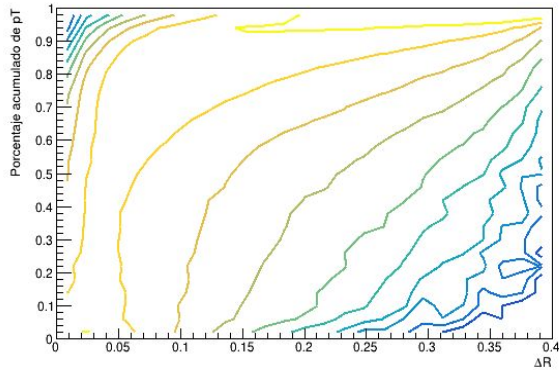
>3 GeV



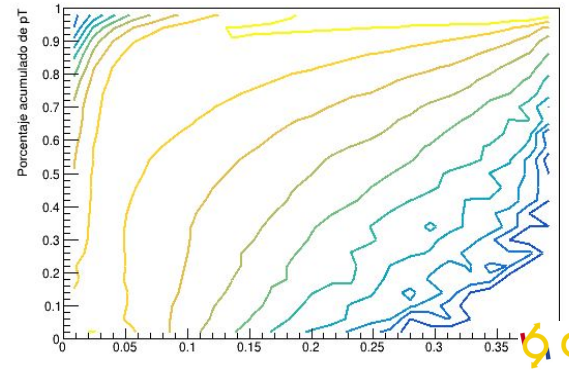
>5 GeV



>8 GeV



>20 GeV



Conclusions

- We can see a significative difference between the behavior at low pt jets and high pt jets in terms of energy and geometry
- The jets from the z prime process are similar to the jets produced by this qcd process

GitHub

Next Steps

Use some Machine Learning tools to make a B-tagging process at low PT

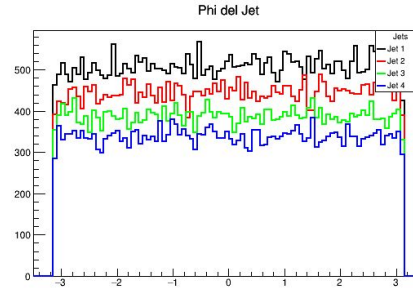
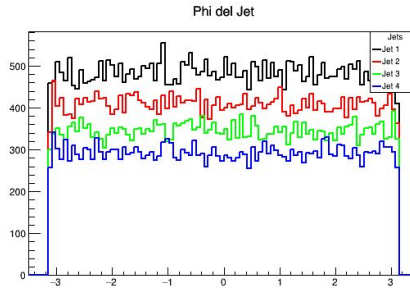
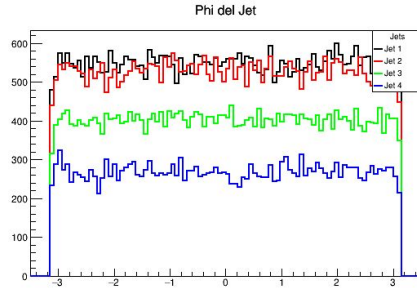
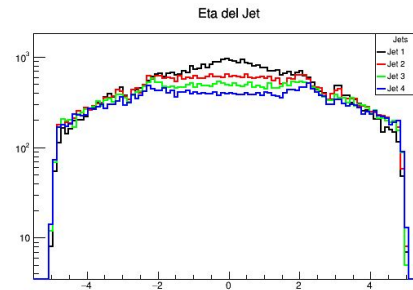
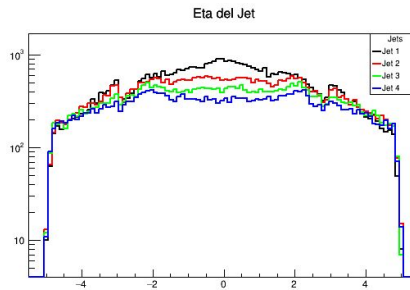
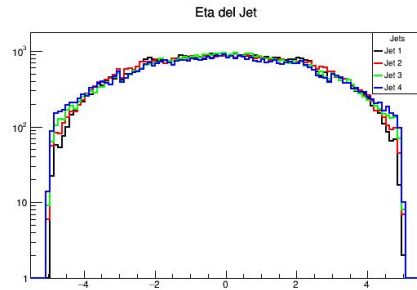


<https://github.com/JuanJ27/Btagginghep>

THANKS!

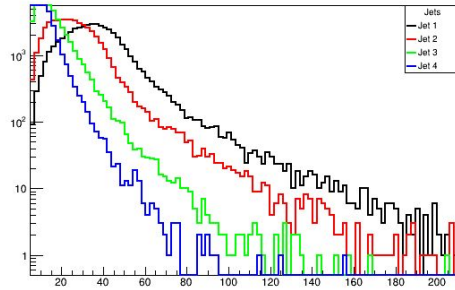


Backup

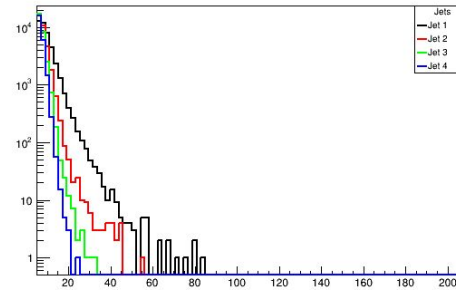


Backup

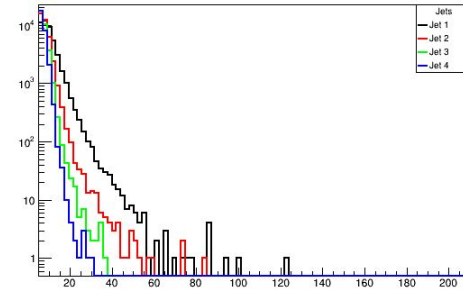
pT del Jet



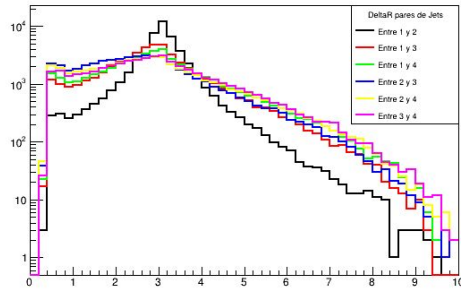
pT del Jet



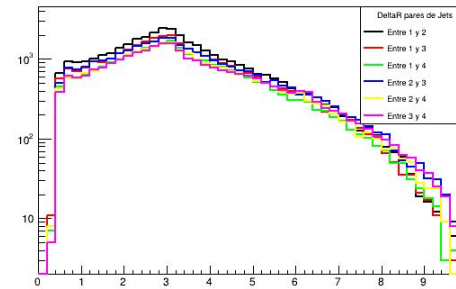
pT del Jet



Delta R entre los primeros 4 jets, por parejas



Delta R entre los primeros 4 jets, por parejas



Delta R entre los primeros 4 jets, por parejas

