

Benedikt Hegner Isabell-A. Melzer-Pellmann

30.6.2009

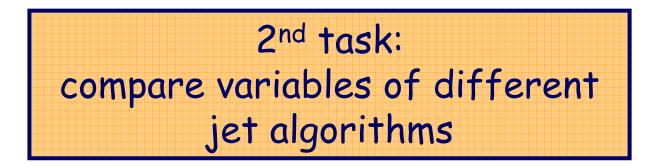
Preparation: link root files

- 1. Login to the NAF (ini cmssw, cd CMSSW-2-2-13, cmsenv etc.)
- 2. Link the following two files:
 - ln -s /scratch/current/cms/hegner/SM.root
 - ln -s /scratch/current/cms/hegner/BSM.root
- 3. Here you will also find two other files to copy:
 - cp /scratch/current/cms/hegner/HOWTO.
 - cp /scratch/current/cms/hegner/example.C .



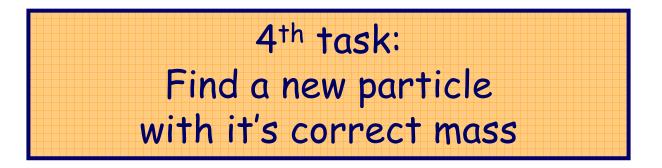
- Install and run fireworks:
 - cd /tmp
 - wget http://cern.ch/cms-sdt/fireworks/cmsShow22.tar.gz
 - tar xzf cmsShow22.tar.gz
 - cd cmsShow22
 - ./cmsShow /scratch/current/cms/hegner/SM.root
- Just have a look at several events to get a feeling, how the jets (and other variables) look like
- For a nice demo video, you can watch here (not now! Take it as a homework...):

http://cms-service-sdtweb.web.cern.ch/cms-service sdtweb/fireworks/demo.mov



- Read in the 1^{st} file using FWLite
- Fill histograms with the following variables for SISCONE (R=0.5) and kTJets (D=0.4 and 0.7) for uncorrected jets (see example.C:
 - p_T (of highest p_T jet)
 - p_T (of 2nd highest p_T jet)
 - η (of highest p_T jet)
 - η (of 2nd highest p_T jet)
 - ϕ between the two jets
 - Invariant dijet mass
- Compare these histograms for the different jet algorithms

- Have another look at the invariant mass: what particle might this be?
- Apply the different jet corrections and watch the development of the invariant mass:
 - raw (done previously)
 - off L1Offset offset correction
 - rel L2Relative relative inter eta correction
 - abs L3Absolute absolute pt correction
 - emf L4Emf correction as a function of the jet emf
 - had L5Flavour hadron level correction for gluons, light quarks, charm, beauty
 - ue underlying event correction for gluons, light quarks, charm, beauty
 - part L7Parton parton level correction for gluons, light quarks, charm, beauty



- Read in the 2nd file using FWLite
- Apply the previously calculated jet energy scale and fill histograms with the following variables for SISCONE (R=0.5 and 0.7) and kTJets (D=0.4 and 0.6):
 - p_T (of highest p_T jet)
 - p_T (of 2nd highest p_T jet)
 - η (of highest p_T jet)
 - η (of 2nd highest p_T jet)
 - ϕ between the two jets
 - Invariant dijet mass
- What is the mass of your new particle?