NANOAOD: a new compact event data format in CMS

Need to store more and more data as LHC continues to operate

Motivation

Perform data analysis with plain ROOT

Need to manage reconstruction and identification "recipes" as the detector conditions evolve over time

need for custom Ntuple production by individual analysis groups

Time between data recording and publication shortened

Centrally maintained companion tool available to perform analysis-specific steps after NANOAOD production:

- Computation of systematic variations of physics observables, data to simulation corrections, scale factors for identification efficiency
- Slimming and merging of object collections
- Calculation of more complex physics observables
- Event skimming

Future prospects

- Promote the format to achieve target adoption of 50-70% of all CMS physics analyses
- Develop customized NANOAOD formats for specialized tasks such as automation of object calibration workflow
- Explore the possibility to add support for alternate choices of generator information and parton distribution functions which are currently expressed as event weights but do not fit within the typical NANOAOD event size
- Increase the frequency of producing new NANOAOD Ntuples

References