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# class: Software Guide

## Overview

Estimates of the jet resolutions are available within the CMSSW software framework via a simple interface. The user needs the jet pT, eta and the number of truth pileup in order to get the resolution for ak5pf and ak5pfchs jets. The code has been developed and tested for cmssw 5\_3\_X for the pileup scenario of the full 2012 data set reaching out to roughly 50 truth number of pileup however the code is capable of extrapolating to higher values. The jets were separated in pT and eta reaching from pT 20 - 1200 GeV and in 29 eta bins from 0 to 5. The results were interpreted with a double sided crystal ball function from which the Gaussian cores 1 sigma interval was used as estimator for the resolution. The resolution was then fitted according to the detector response function:  $\sqrt{C^2 + S^2/pT + N^2/pT^2 + \text{sign}(PU)*PU^2/pT^2}$  where the last term is added as additional noise to separate out the pileup dependency of the resolution. As of today resolutions are available for ak5pf and ak5pfchs jets both Pythia Tune Z2Star reweighted according to the Summer12\_S10 pileup distribution.

## Installation

The code can be checked out from github. Just execute these commands to get a working version which includes a test macro which illustrates how to use the code.

```
cmsrel CMSSW_5_3_X
cd CMSSW_5_3_X/src/
cmsenv
git cms-addpkg CondFormats/JetMETObjects
git remote add jetResolution53 -t JetResolution53 git@github.com:adrager/cmssw.git
git fetch jetResolution53
git rebase --onto HEAD fb6b610 remotes/jetResolution53/JetResolution53
scram b -j5
cd CondFormats/JetMETObjects/test/
root -l TestJetResolution.C
```

## Interface

Please see the TestJetResolution.C file in CondFormats/JetMETObjects/test for usage.

-- Arne-Ramsus Draeger - 15-Aug-2014

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This topic: CMSPublic > SWGuideJetResolution

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