Few Comments to Paper PRF-18-001 from Kerstin Borras

**Main point:**

In the title, the abstract, everywhere else, it is talked about the “CMS hadron calorimeters”

Meant with “CMS hadron calorimeters” are HB, HE and HF.

 See for example in the abstract:

 The methodology for the calibration of the hadronic calorimetry system of the CMS

 detector at the LHC is presented………

However, the full ““CMS hadron calorimeter system” contains also CASTOR and ZDC. These have at least to be mentioned and a reference given to their calibration / performance and the phrase

“CMS hadron calorimeters” should be changed into “CMS central hadron calorimeters”.

**Abstract:**

“The inter-calibration of the channels exploits the uniformity of energy deposition with respect

to the azimuthal angle.”

This triggers immediately the question “and what about the non-uniformities in the beam background ?”

Maybe add:

“The inter-calibration of the channels exploits the ++assumed / approximate++ uniformity of energy deposition with respect to the azimuthal angle.

**Introduction:**

The introduction does not mention the “uniformity of energy deposition with respect

to the azimuthal angle.” somewhere…. This should be added, maybe close to

Line 9:

“of the (+employed) channels”

Line 11: is this comma correct ?

“measurement (e.g., searches”

Line 16/17:

“calibration of its (+ central) hadron calorimeter (HCAL).”

Line 34:

“relatively large size of hadronic showers (-relative + compared)”

Line 32/33: “through the use of multiple technique and data samples.”

Line 36: “These methods were first used with collision data collected…”

But the methods are not described, for example not the assumed phi-symmetry.

One could at least give a reference to the section, which contains the description.

**Section 2: The CMS Detector**

Line 102:

“A wedge (-is) contains absorber plates…”

Line 109:

“remaining layers have 3.7mm thick (-megatiles +scintillators).”

In line 107 the megatiles have been defined as the grouped scintillators….

Line 113-117: this can be mis-understood

“The megatiles are divided into 16 sections along the z-axis, denoted by ji*h*j = 1 to 16, so that each tile corresponds to delta-etaof 0.087”

and then

“The set of scintillators corresponding to the same value of i-eta and i-phi (denoting the phi segment) are referred to as a “tower”.”

So what is meant by a “tile” in the first sentence ? Usually one has an individual scintillator tile and this is used in the sentences above these sentences….

Section 3: Event Reconstruction

Line 158:

“… (-selections + selects) …”

Line 159:

“a threshold” what is this threshold ? was it fixed for the full data taking period ?

Figure 4 and Figure 5:

What are the errors in the scale factors ?