Puzzles for the Z-->ee signal extraction team

Puzzle #1: What the hell is going on in EE ?

According to slide #26 third bullet in the pre-approval talk, there is essentially no W event with electron in EE- (and therefore efficiency in EE- is 0). Similarly, in EE+ the efficiency is less than 50%. On the other hand things look quite opposite in the Z->ee sample (I know we have very low statistics, but still ...):

(a) In the 3 Z->ee events we got in May27 re-Reco data, we have the following combination: 2 EB+ EE+, 1 EB+ EE-.

(b) Among the events we threw away because they did not pass our WP95 selection (but, at least one of which could have passed old WP95 AFAIK), most had one electron in the endcap.

(c) We got 1 Z->ee candidate in the last weekend's run (another candidate we missed narrowly would pass old WP95 selection). It has one electron in EB- and the second electron in the EE+.

So, why is it that we have all our Zee candidates with one leg in the EE, but very few W candidate with electron in EE ? Does it point to problem with EG5 triggering or is it just a statistical fluctuation ?

Puzzle #2: Why no Z->ee candidate in EBEB ?

We expect more than half (~52%) of our Z->ee candidate to have both electrons in barrel. Only about one third (~37%) events should have EBEE combination and 11% should have EEEE combination.

All 4 confirmed candidates so far passing WP95 selection have EBEE. Most of the narrowly rejected candidates also have the same combination. Only 1 candidate (that I am aware of) which could have passed our "old" WP95 selection but narrowly failed the new WP95 was actually EBEB.

At this point I think our current observation is just a consequence of the "law of low numbers" in statistics. But we need to keep an eye on this. Maybe puzzle #1 and #2 are closely connected.

Puzzle #3: Do we really have 1 Zee from weekend's run ?

You may ask "Are you kidding ? Didn't we double the dataset with addition of 12/nb ?" Yes, we apparently did double our dataset, but so far we have found just 1 Z->ee candidate in these runs and missed another candidate narrowly (would have passed old WP95). Only a relatively small run had ECAL timing problem, so that should not be an issue.

What is going on here ?