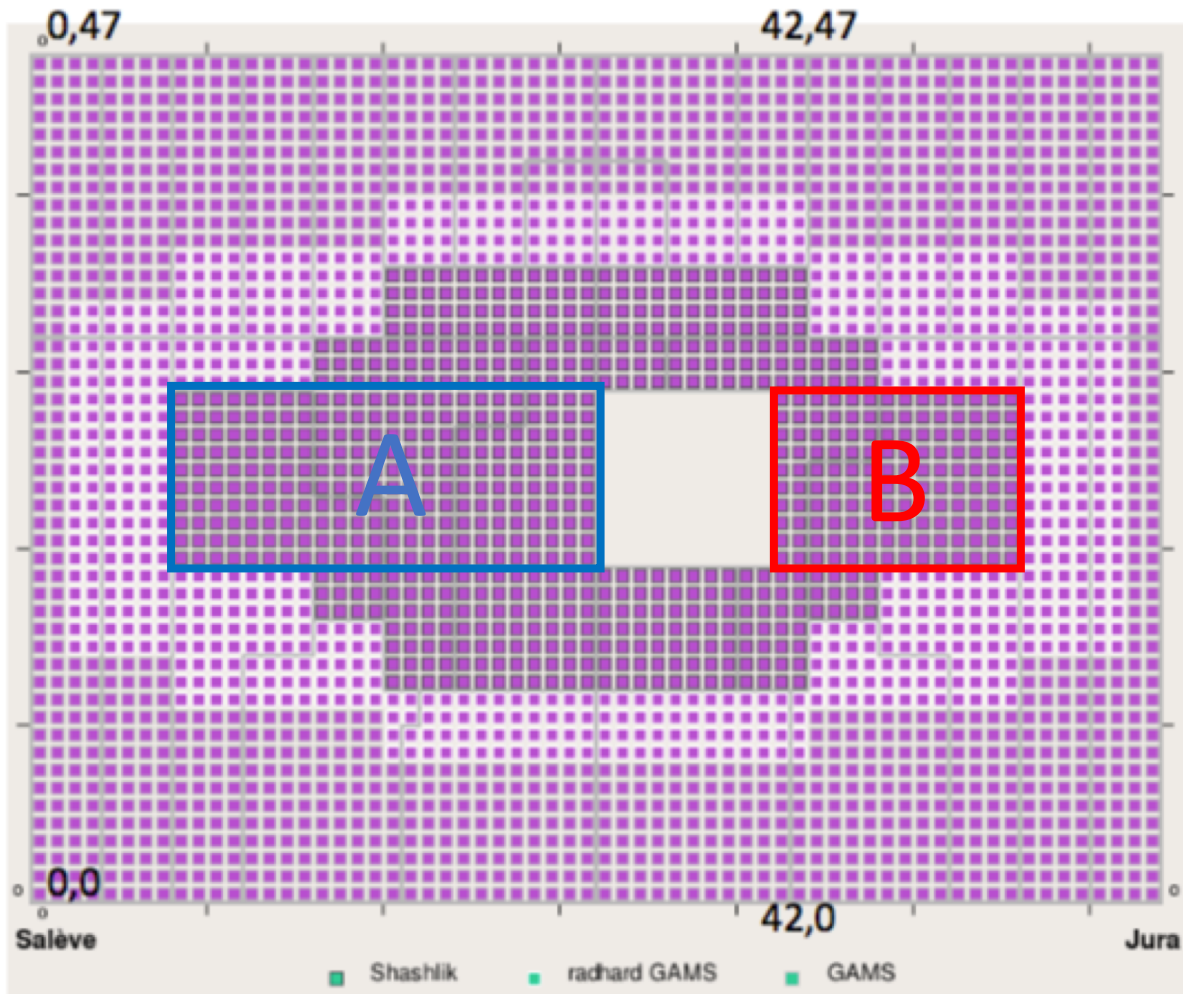# Study on the ECAL2 correction

Po-Ju, Nicole, Andrea, Marketa

> As discussed previously (given in the presentation by Nicole), an additional run-by-run normalization factor N_i could mitigate the fluctuation of LED supplying Shashlik.
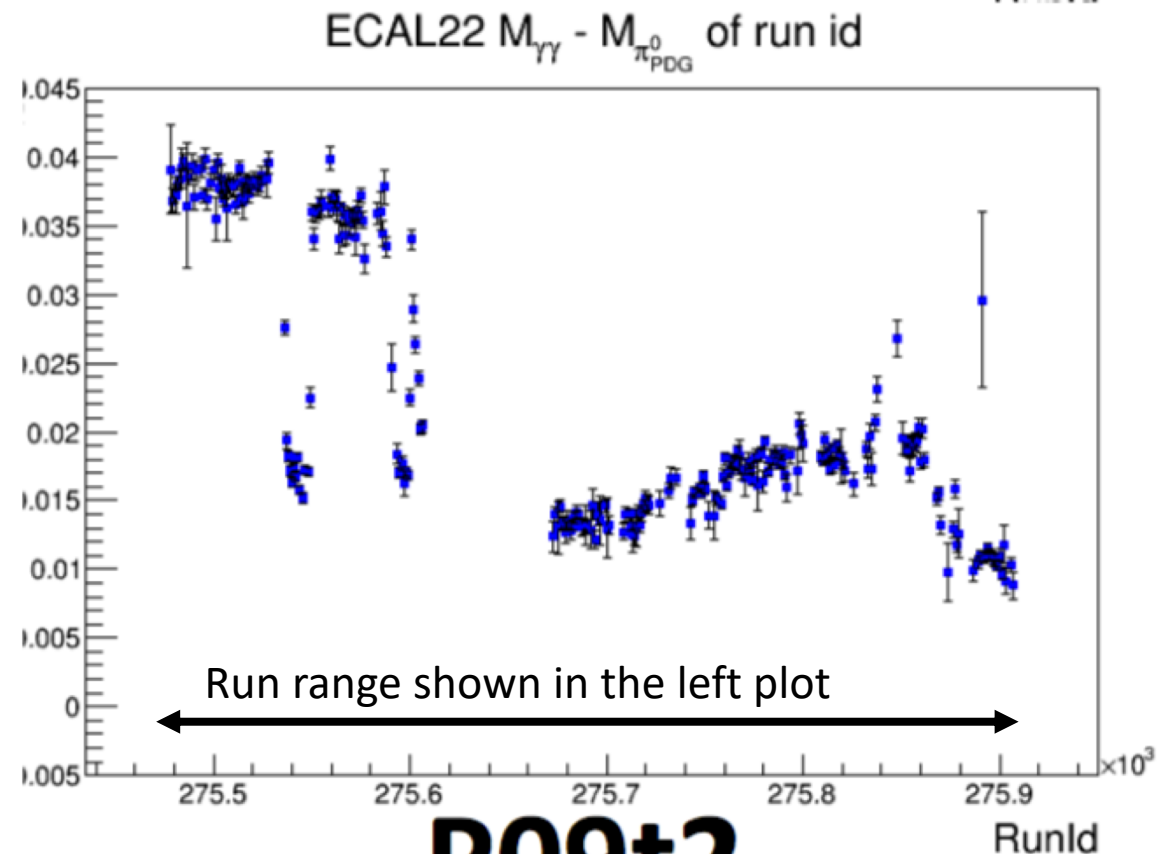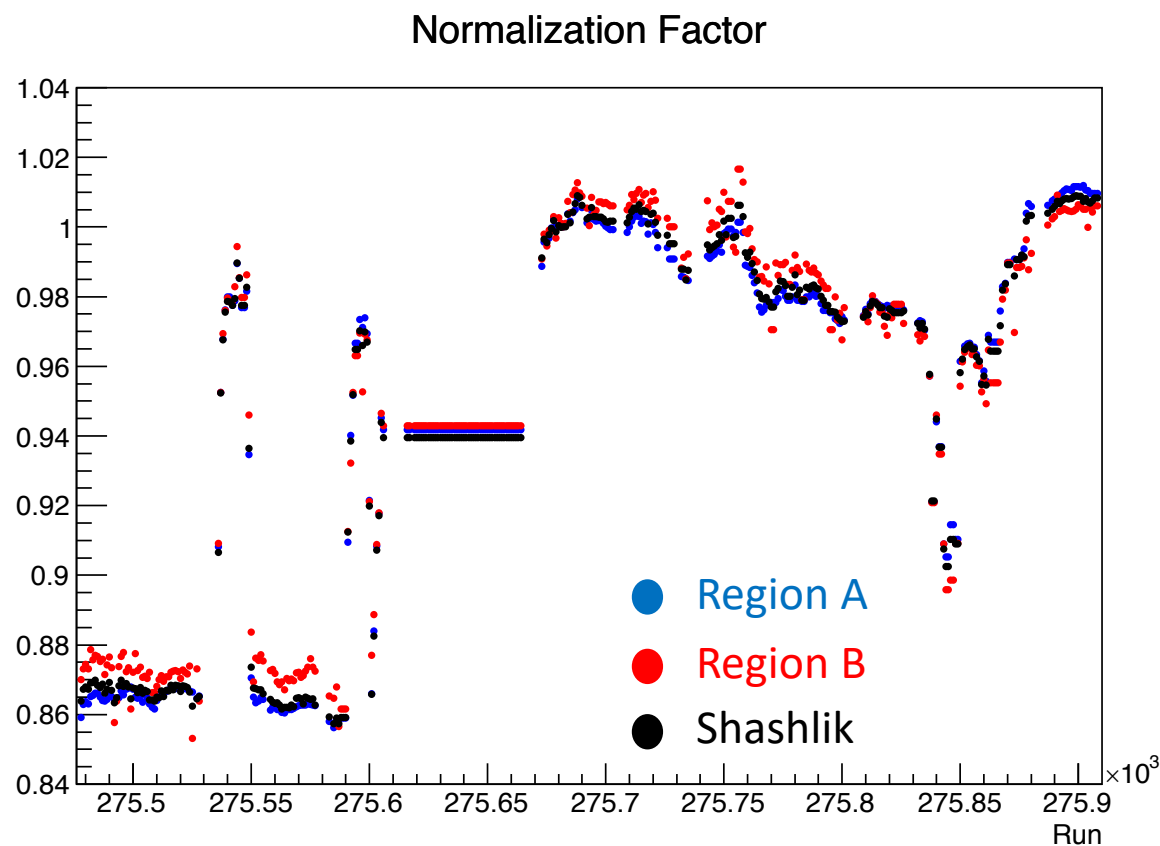

$$C_{ij} = \frac{ampl\ LED_{i_0 j}}{ampl\ LED_{ij}} \qquad N_i = \frac{\sum_{j=1}^{N} 1/C_{ij}}{N}$$

For a specific cell j in a run i. Here i_0 is a specific reference run.

> Try to evaluate the normalization factor in different regions, see if there is some dependence.

- Region A -> a rectangle on Saleve side
- Region B -> a rectangle on Jura side
- The whole Shashlik

➢ The N_i for all P09 runs are evaluated. Some discrepancy between different regions can be observed, but rather small as compared to the overall fluctuation
➢ Compare the normalization factor, which is simply a mutiplicative factor to energy registered in ECAL2, to the Mass difference plot made by Piotr, similarity (but in opposite ''Polarity'') can be obsereved.

Normalization Factor

- Region A
- Region B
- Shashlik

ECAL22 $M_{\gamma\gamma} - M_{\pi^0_{PDG}}$ of run id

Run range shown in the left plot

P09t2

➢ Made a ECAL2 cluster energy versus charged track momentum plot, as Piotr did, but with normalization applied to the energy registered by Shashlik cells.
➢ For a single run only – run 275527, which looks problematic.
➢ The statistics is not much, but the two-band structure disappeared.
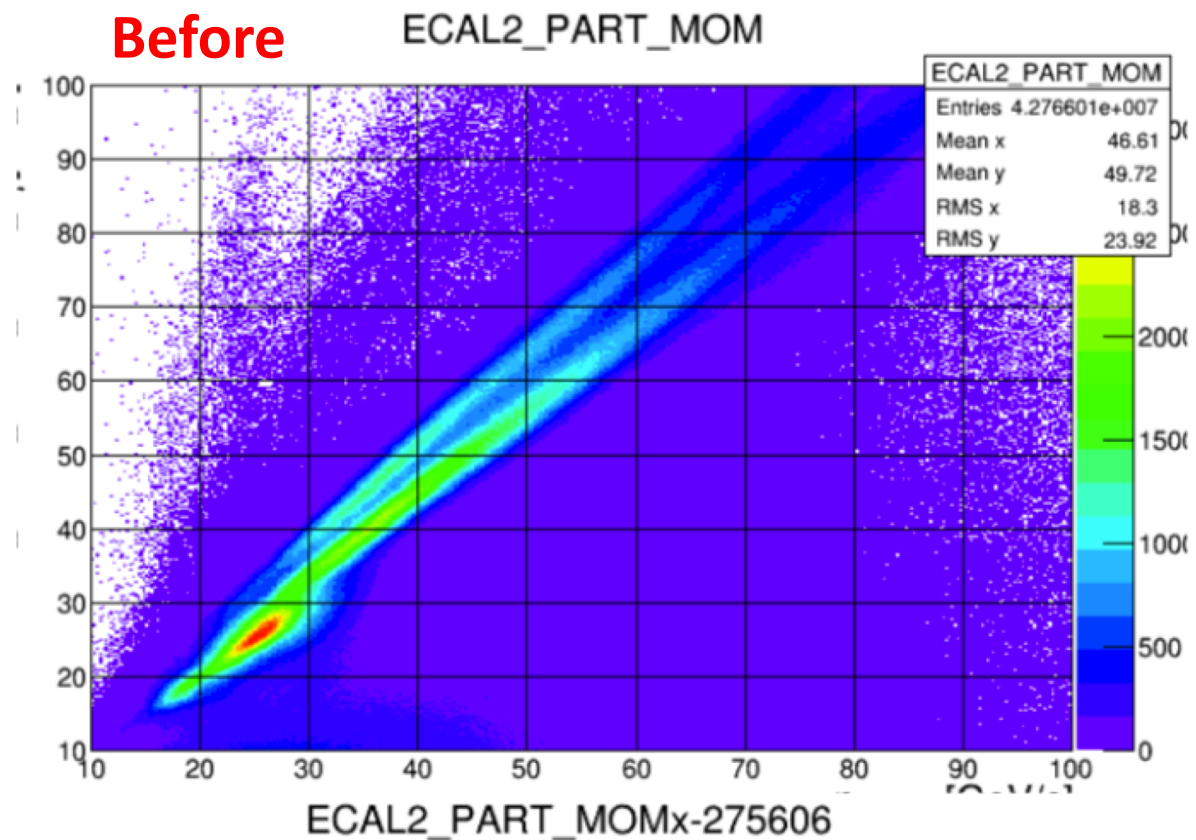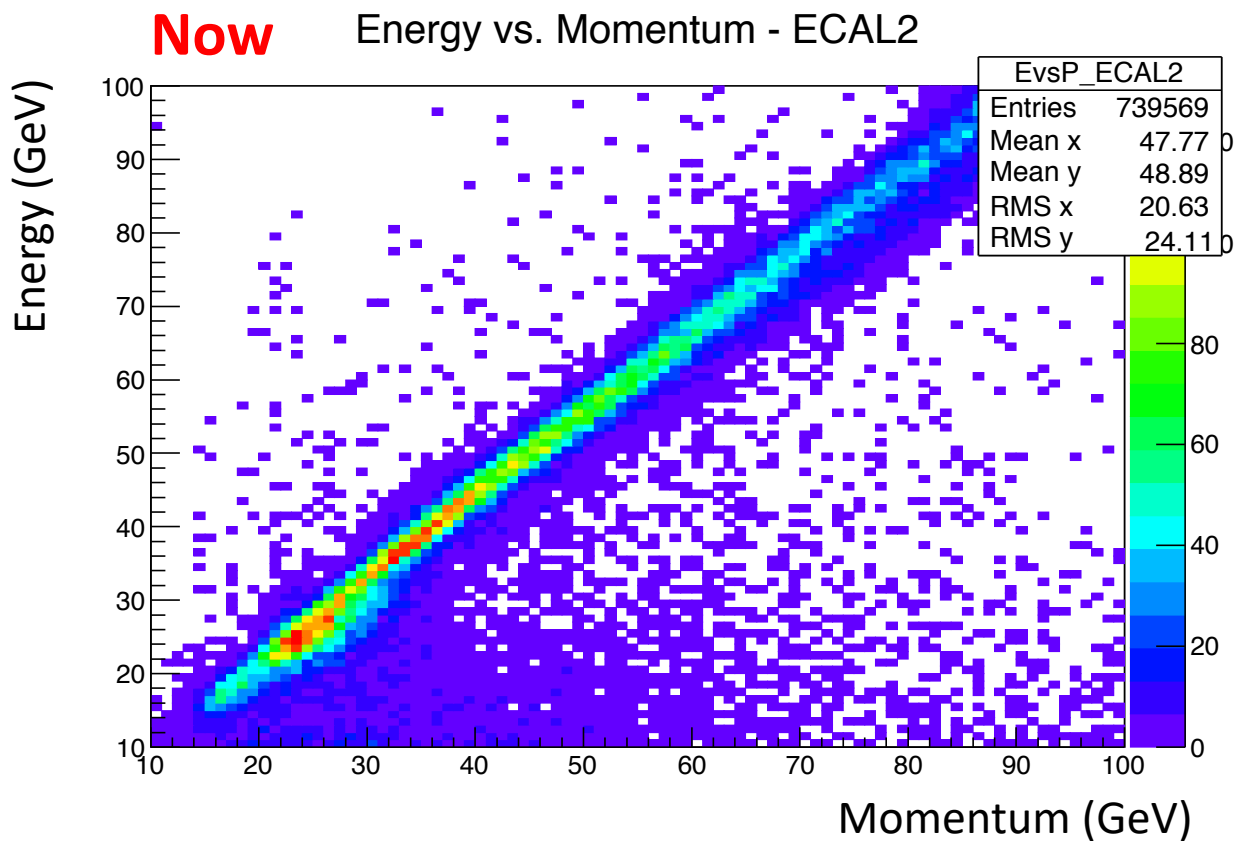
Next steps:

➢ Try to make the ''E vs P'' plot with all P09 data, or other methods to make sure the issue is solved → in progress
➢ Cross check the results with Marketa
➢ Have the new calibration-factor files produced
➢ Proceed on P07 data