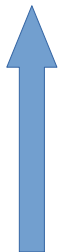
RESULTS TO BE DISCUSSED

1) MIP CALIBRATION METHOD

2) COMPARISON BETWEEN MIP, Pi0 AND ELASTIC CALIBRATION

3) CLARIFICATION ABOUT THE VTP-FADC



MIP CALIBRATION

METHOD USED

=>> The deposited energy in each block while:

- Took the 8 neighbors to the current block

- T(neighbor block) - T(current block) < 5 ns
(to ensure that there is no pulse in the adjacent blocks)

- E(neighbor block) = 0 (1block clusters)

- Applied Exponential decay + Landau fit to determine the peak position.

- Calculated the calibration coefficients by :

C (Block) = 0.215 (G4-simulation) (GeV)/ peak-position (Block) (GeV)

- **Kinematics x60_3** :
SHMS = **35.02 deg**
HMS=**16.48 deg**
NPS = **18.54 deg**

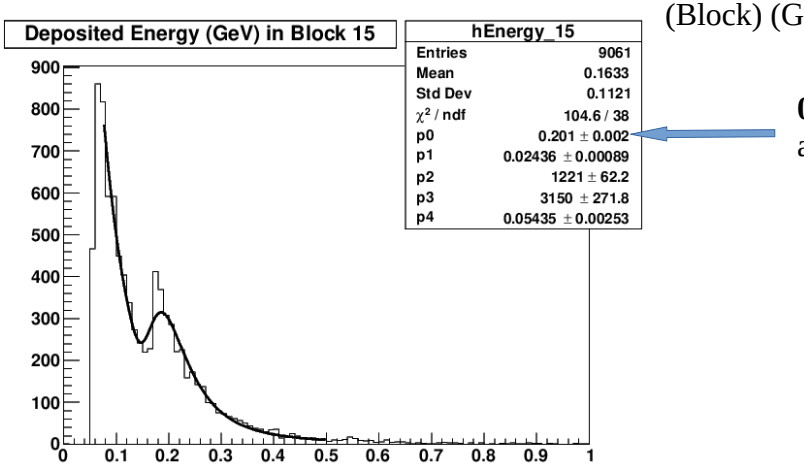
- Configuration: **Coin_sparse**

- RUNS ANALYZED (**LH2**) :
2011, 2014, 2015, 2016 and 2017

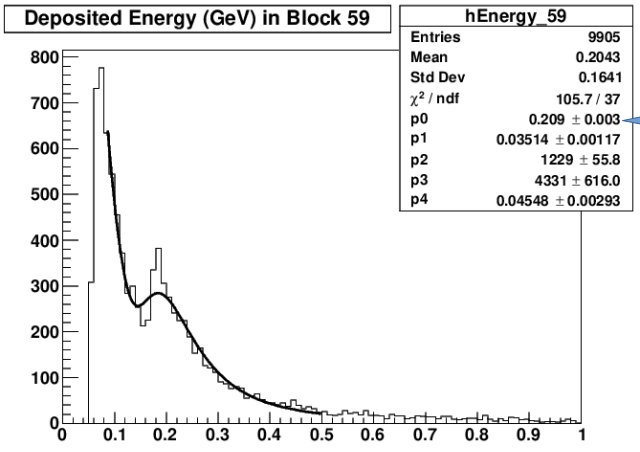
- **Kinematics x50_4** :
SHMS = **31.75 deg**
HMS=**16.91 deg**
NPS = **15.48 deg**

- Configuration: **Coin_sparse_low**

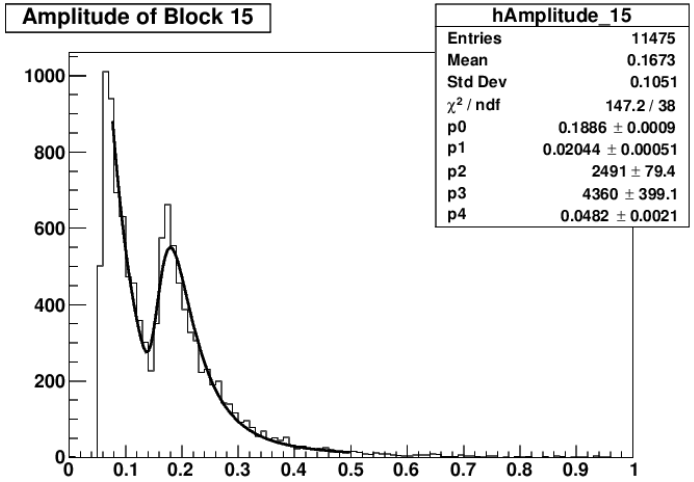
- RUNS ANALYZED (**LH2**) :
2494, 2550, 2571, 2603, 2632, 2657

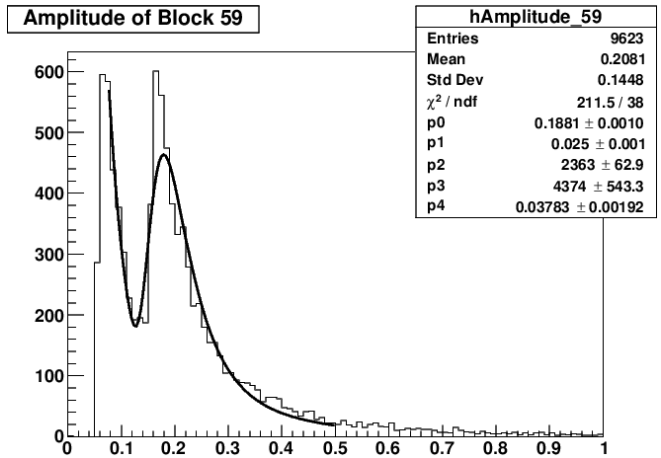


0.201 GeV as
a peak position



0.209 GeV as
a peak position





COMPARISON BETWEEN MIP, Pi0 AND ELASTIC CALIBRATION (coin_sparse)

- **Kinematics x60_3** :
SHMS = **35.02 deg**
HMS=**16.48 deg**
NPS = **18.54 deg**

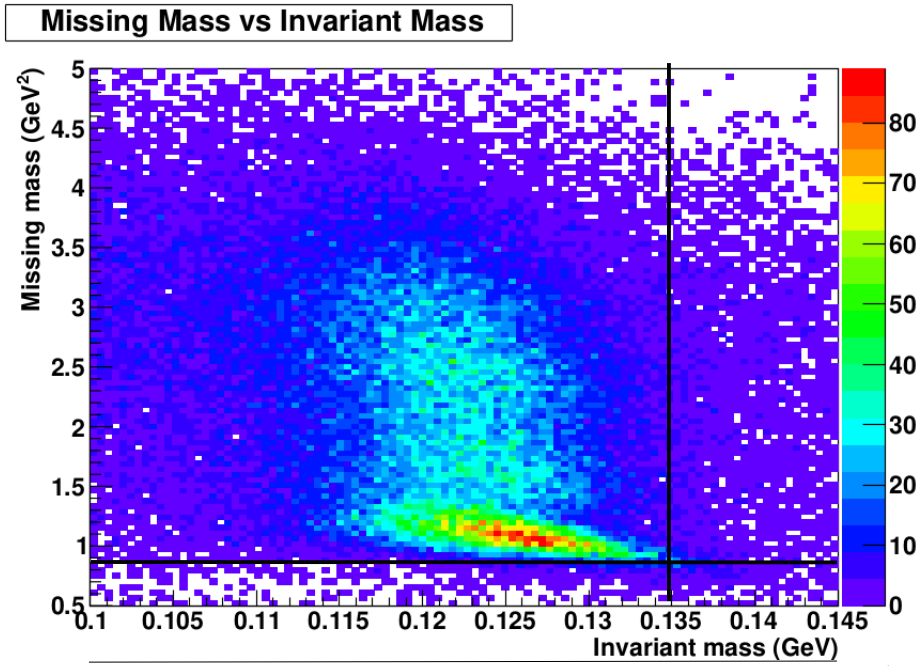
- Configuration: **Coin_sparse**

- RUNS ANALYZED (**LH2**) :
{**2011, 2014, 2015, 2016 and 2017}**

- Removed **4** columns, the columns from **0 to 3**

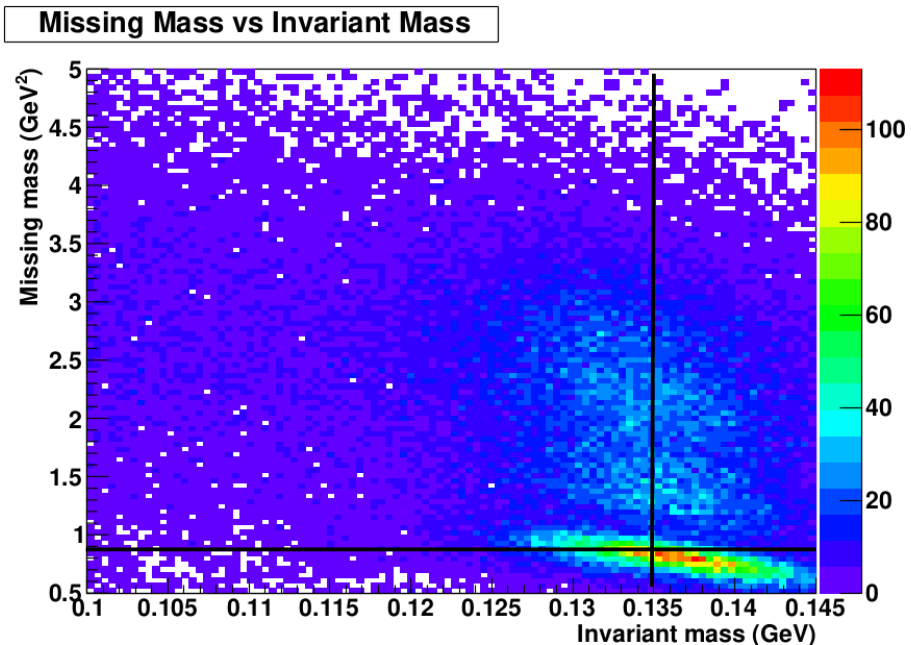
- Removed the **edge** columns (on **top**, **bottom** and on the **left**, far from the beam side).

Before MIP and Pi0 Calibration

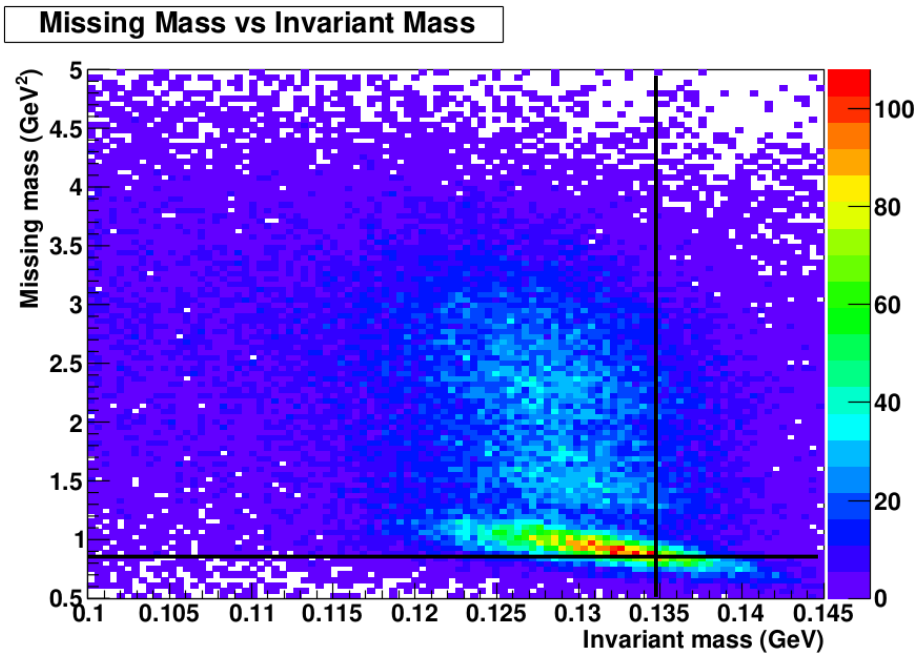


Using the last elastic calibration coefficients

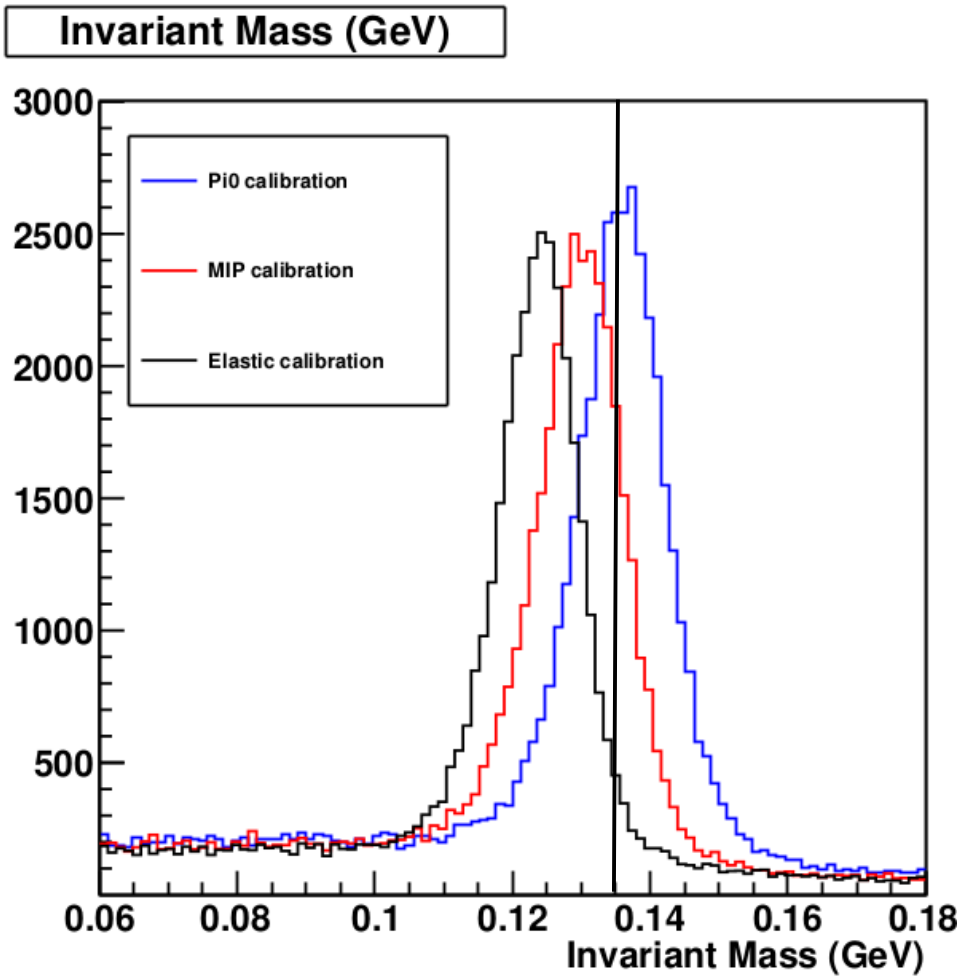
After Pi0 Calibration

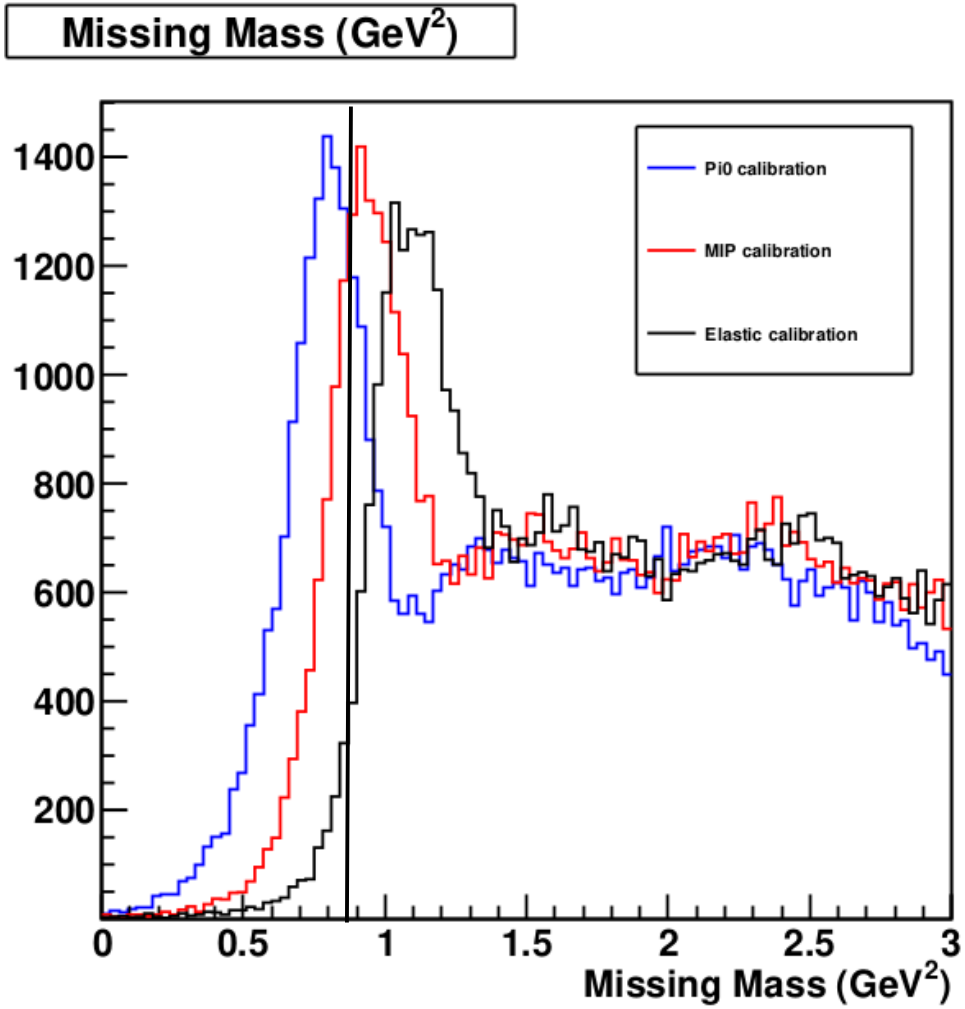


After MIP Calibration



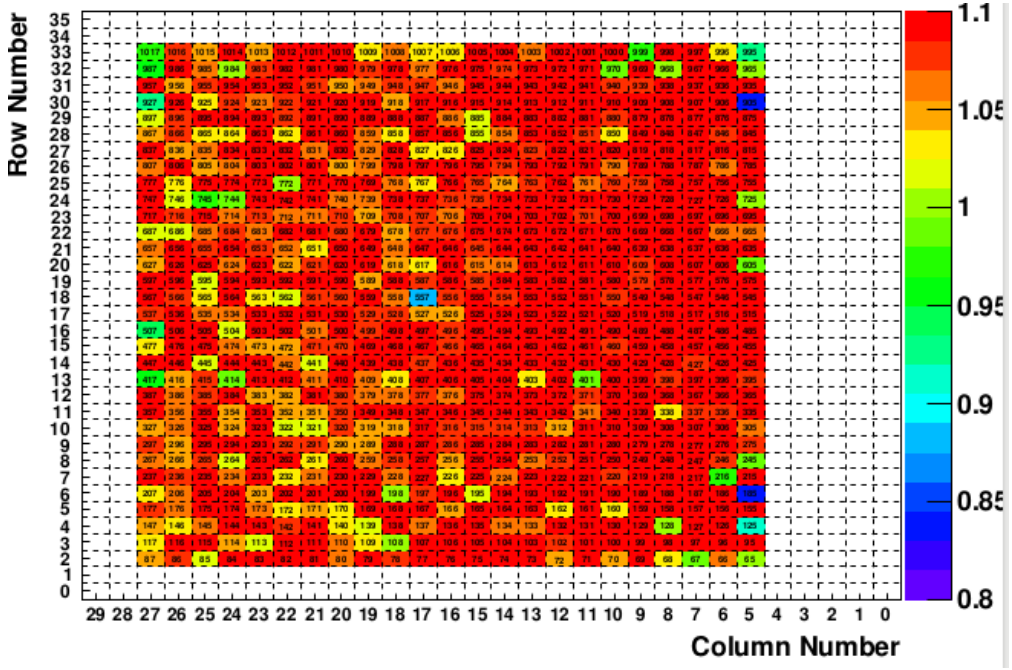
COMPARISON BETWEEN MIP, Pi0 AND ELASTIC CALIBRATION (coin_sparse)



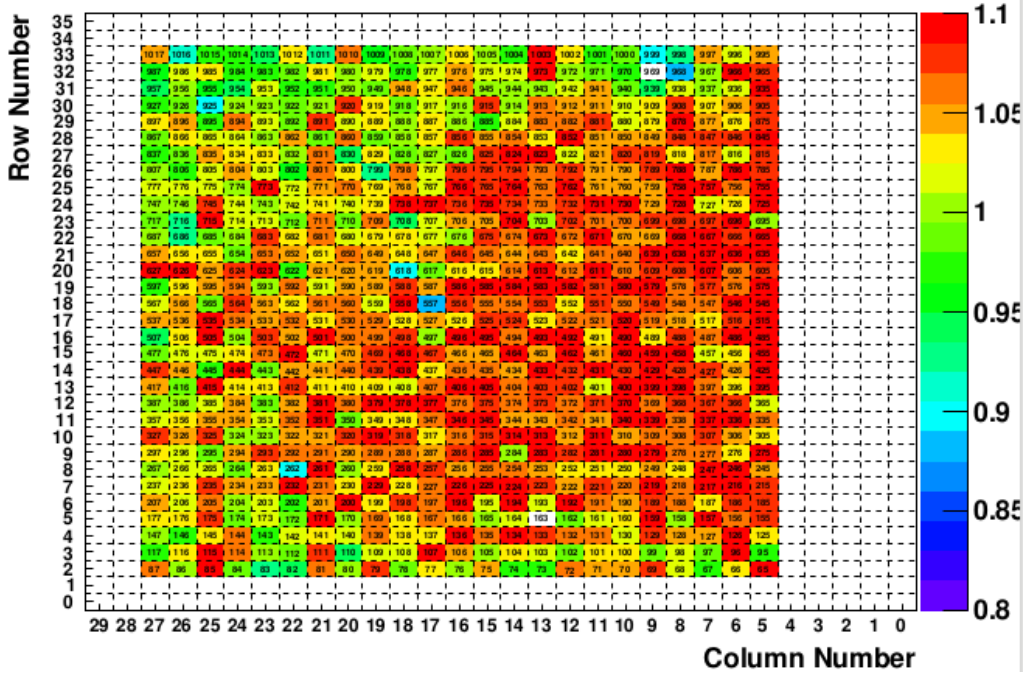


==>> Pi0 calibration method is a slightly better in terms of peak position with respect to the MIP and to the elastic calibration.

Calibration coefficients for Pi0

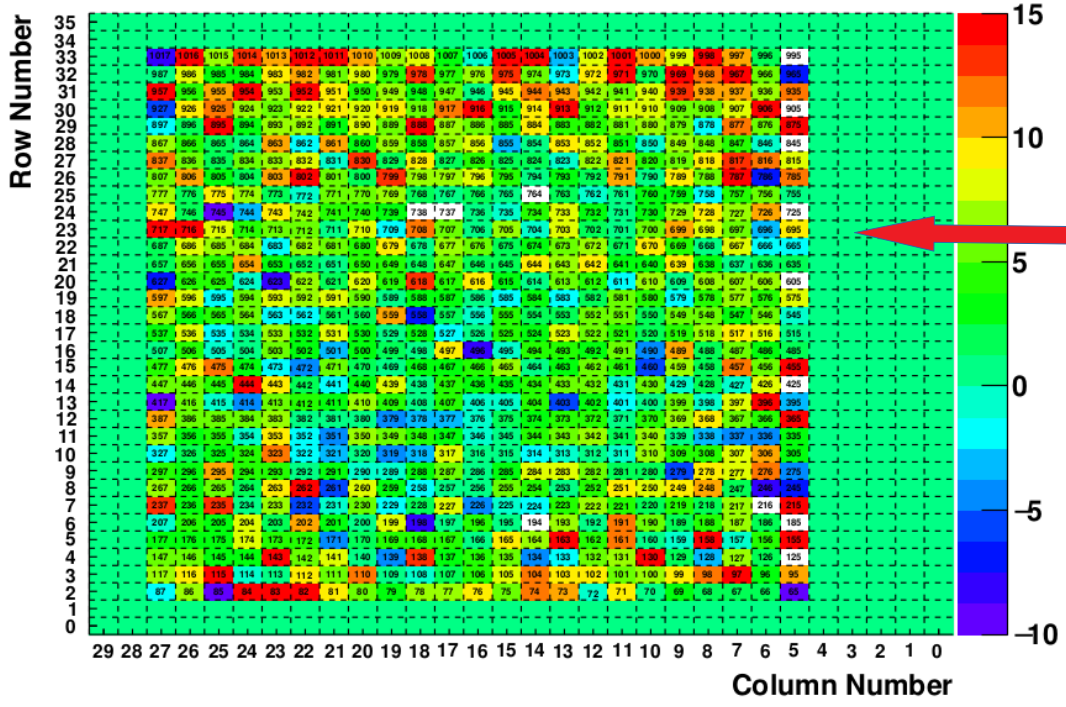


Calibration coefficients for MIP's

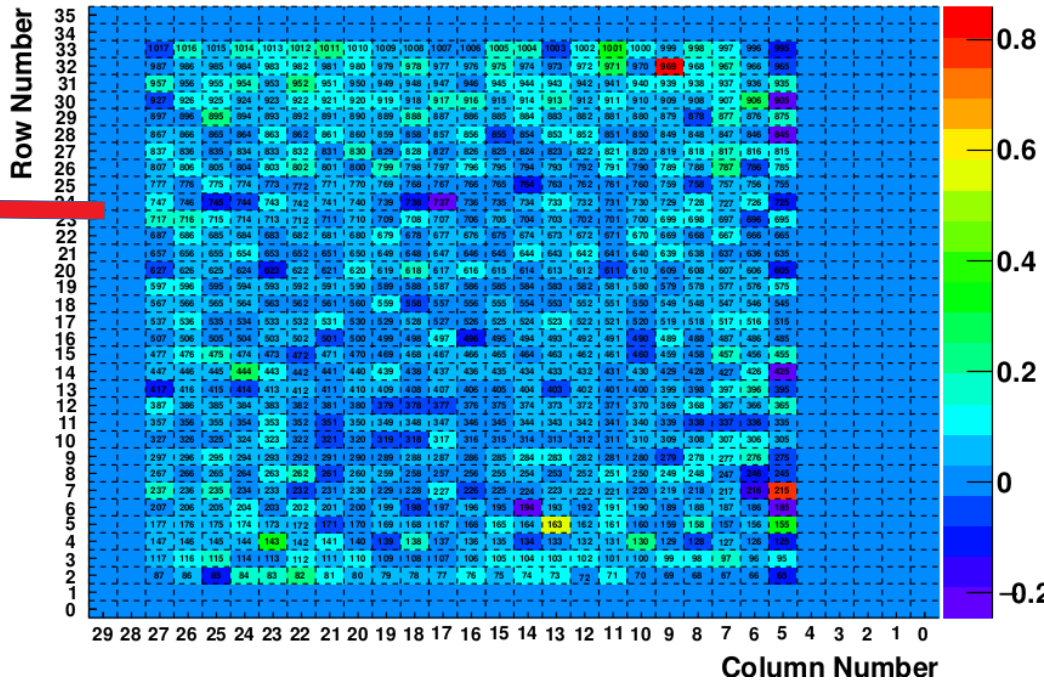


==>> Same dependency on x (closer to the beam line) is seen between the MIP's and the Pi0 calibration coefficients.

Variation of MIP/Pi0 Calib Coeff (in %)



Pi0 Calib Coeff – MIP Calib Coeff



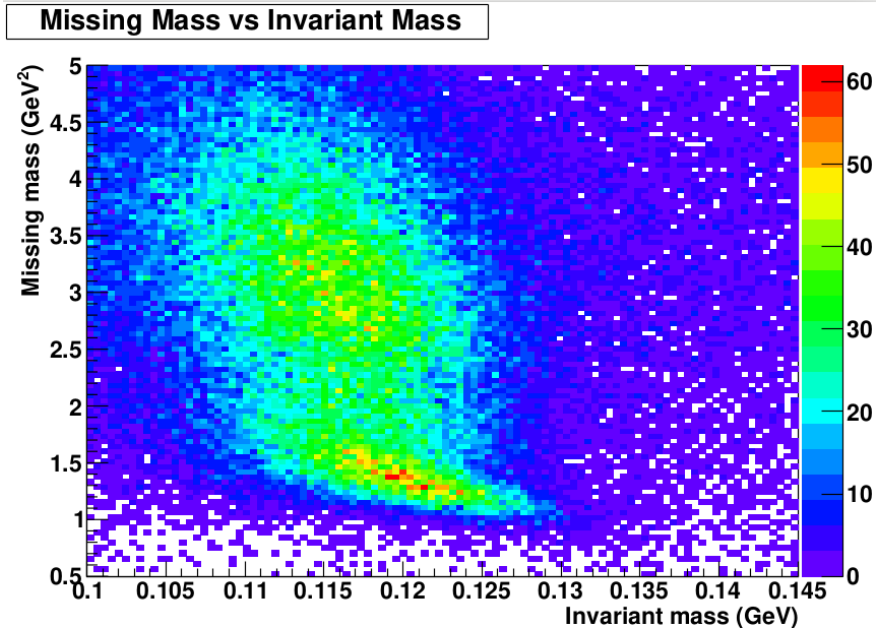
COIN_SPARSE_LOW

LH2

Before MIP and Pi0 Calibration

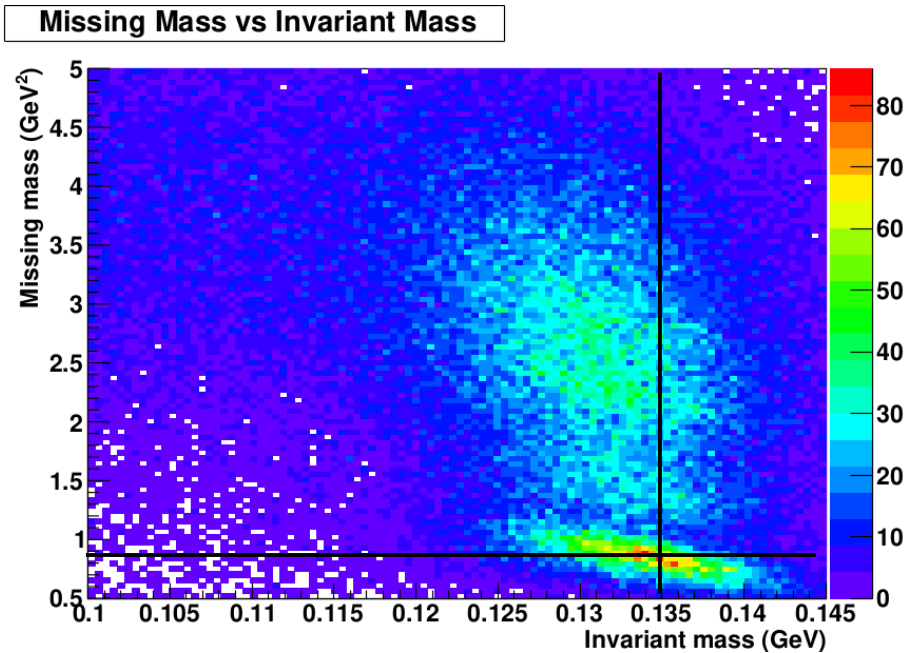
- **Kinematics x50_4**:
  SHMS = **31.75 deg**
  HMS=**16.91 deg**
  NPS = **15.48 deg**

- **6 RUNS ANALYZED:**
{2494, 2550, 2571, 2603, 2632, 2657}

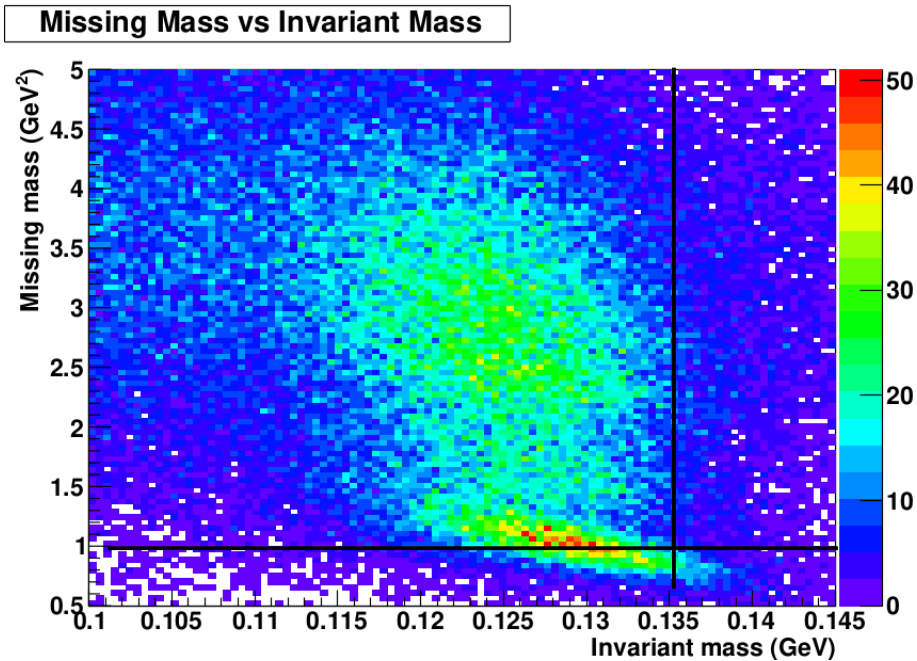


Using the last elastic calibration coefficients

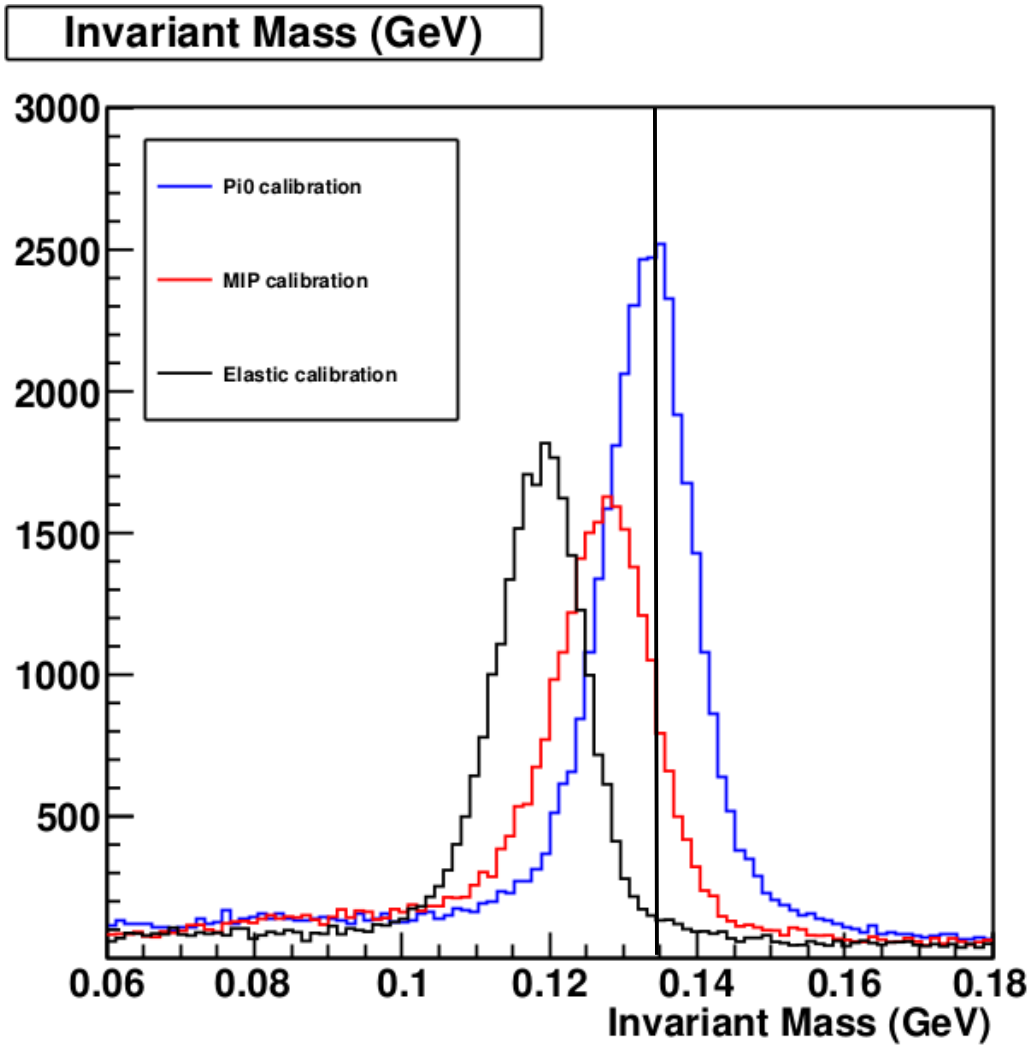
After Pi0 Calibration

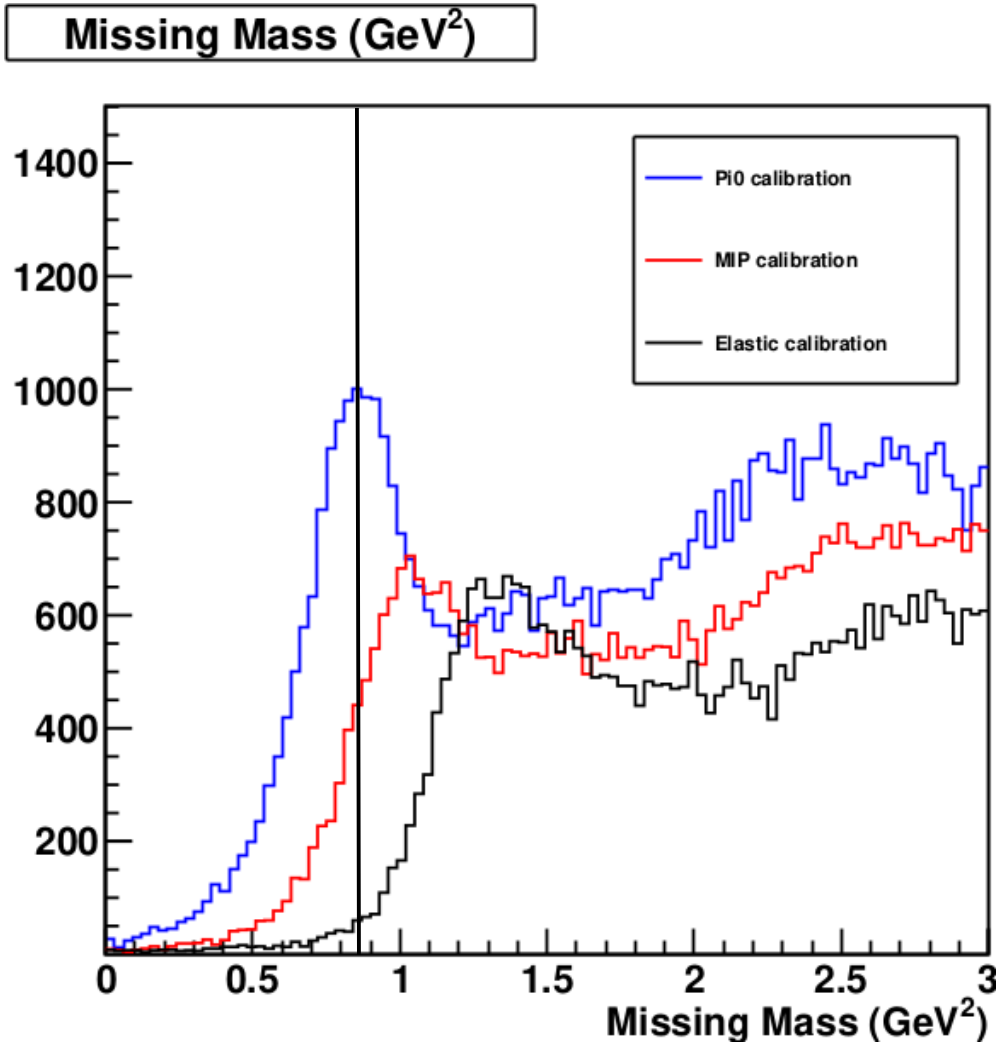


After MIP Calibration



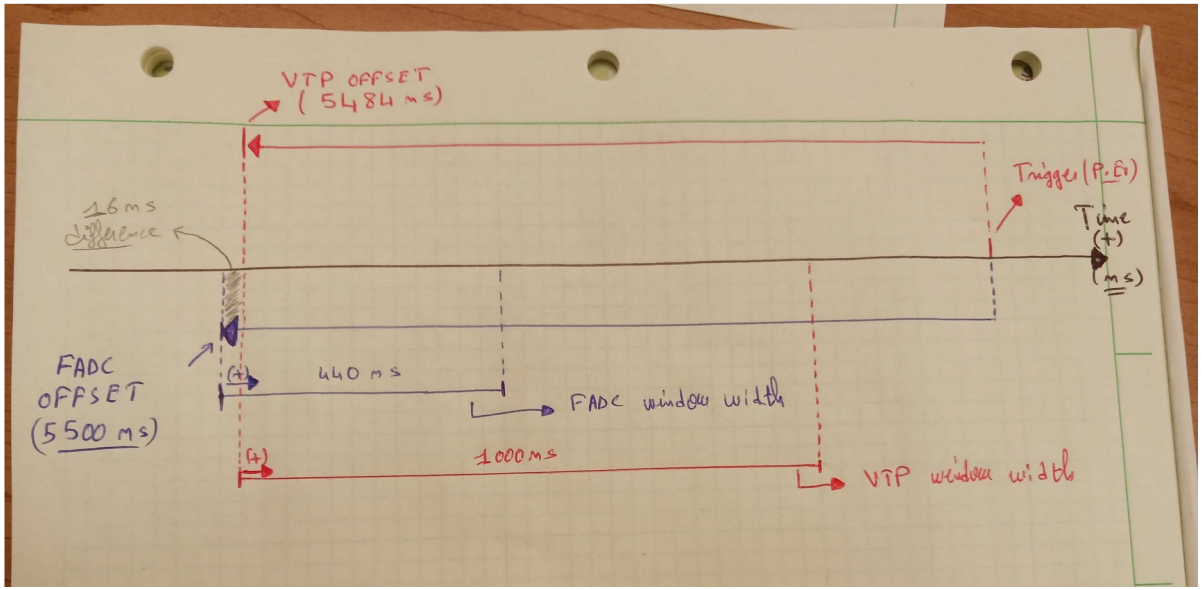
COIN_SPARSE_LOW





==>> Pi0 calibration method is better in “coin_sparse_low” too.

CLARIFICATION ABOUT THE VTP-FADC



ENERGY