



# Energy Correction

16.12.2018

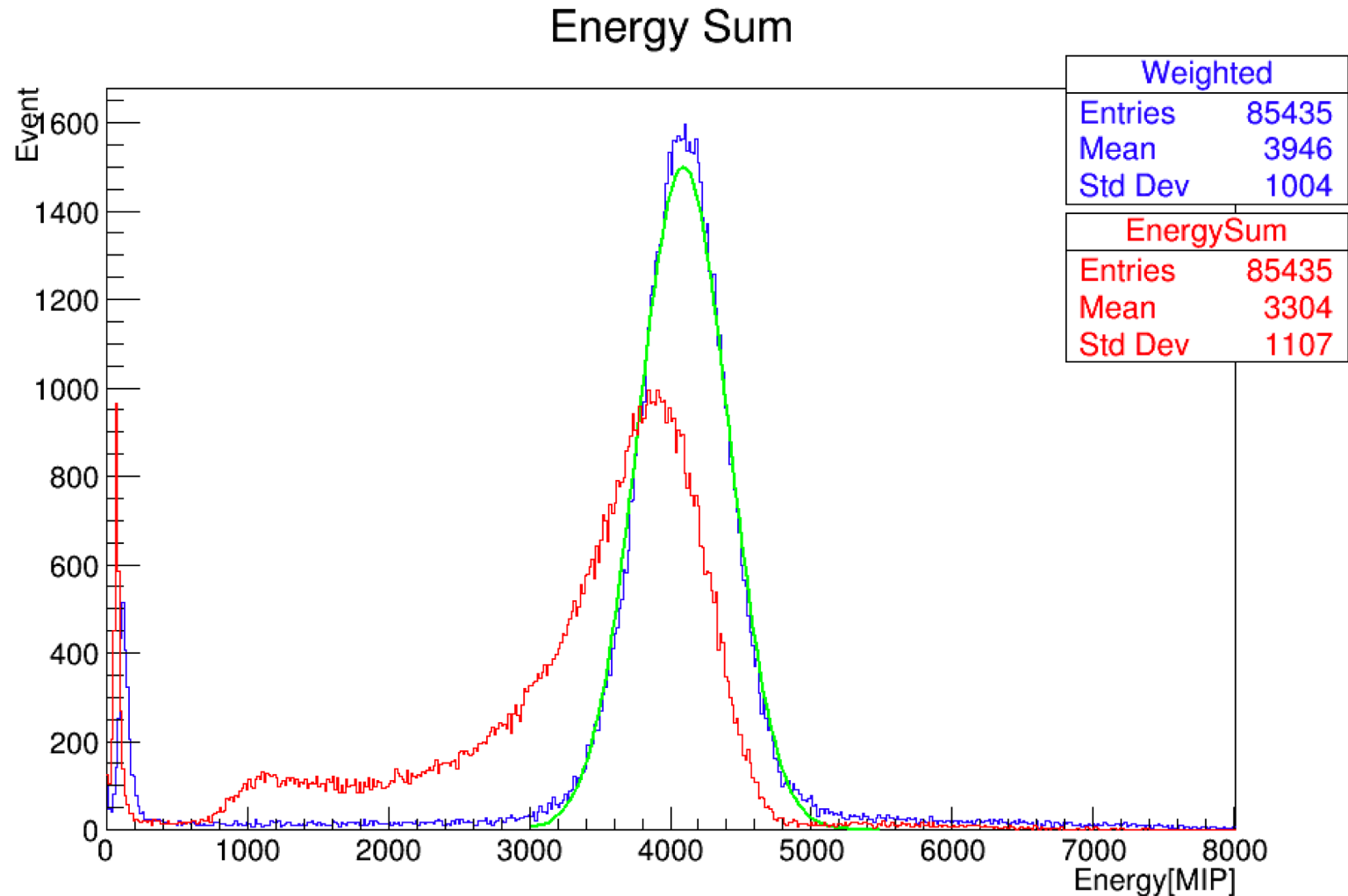
**Tatsuro Torimaru**  
**ICEPP, The University of Tokyo**  
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# Simple Weight

- **Simple weight : ratio of absorber thicknesses**
  - **AHCAL 39<sup>th</sup> layer**
    - Absorber is three times thicker than other layers.
  - **1<sup>st</sup> layer of Tail Catcher**
    - Ratio :  $(17.2 \times 3 + 2.00)/17.2$  -> **MC**
    - Ratio :  $(17.2 \times 3 + 12.1)/17.2$  -> **Data**
  - **Other layers of Tail Catcher**
    - Ratio :  $74.0/17.2$

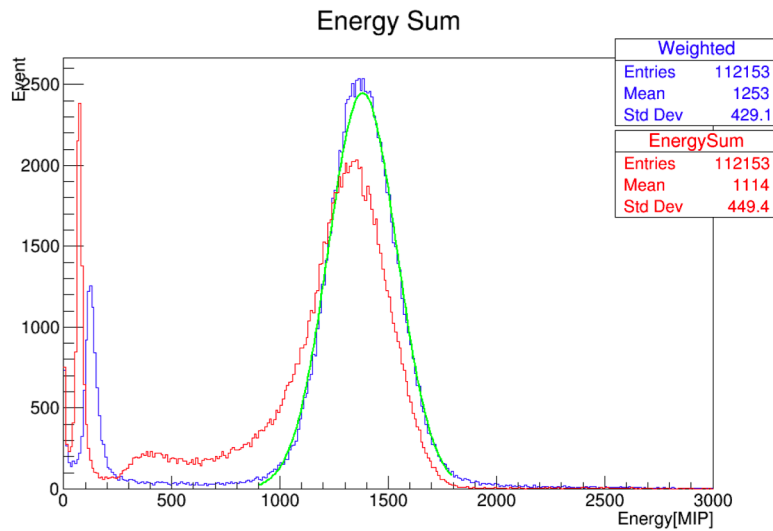
# Result

- Run 61285, Pion 120 GeV
- Energy resolution
  - $\sigma_E/E = 0.787$

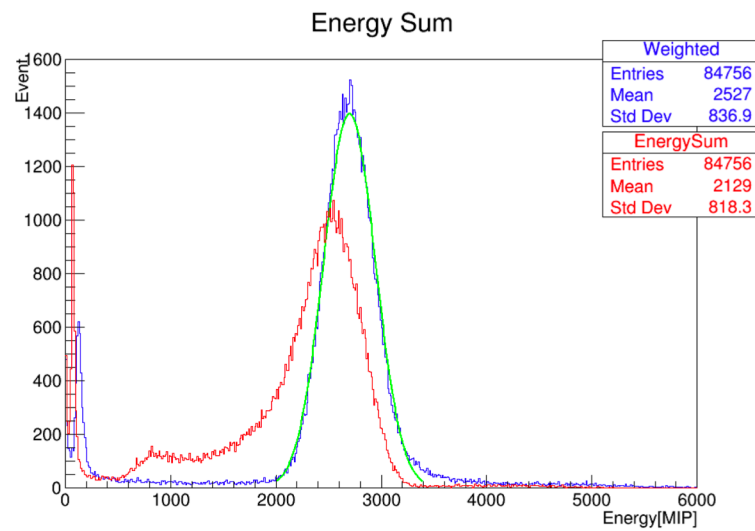


# Results for Other Energies

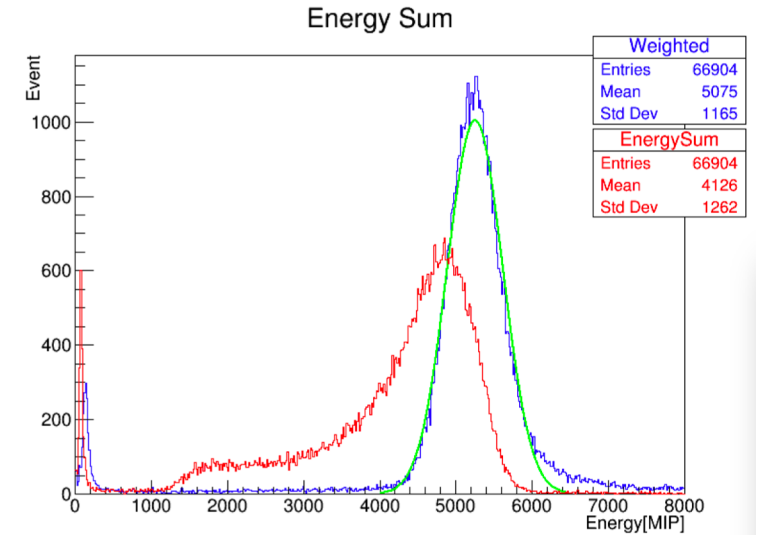
- Run 61275, Pion 40 GeV
- $\sigma_E/E = 0.115$



- Run 61280, Pion 80 GeV
- $\sigma_E/E = 0.0910$

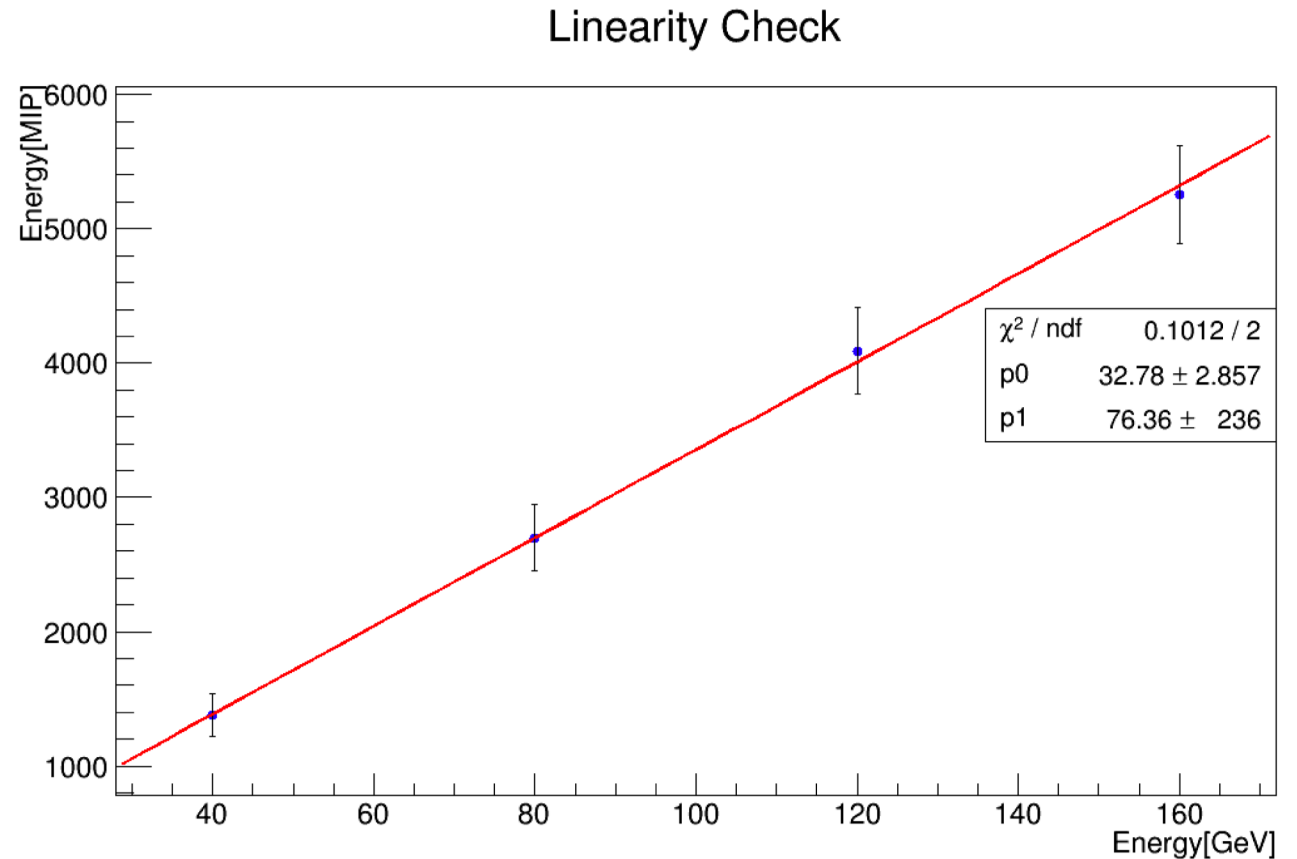


- Run 61230, Pion 160 GeV
- $\sigma_E/E = 0.0693$



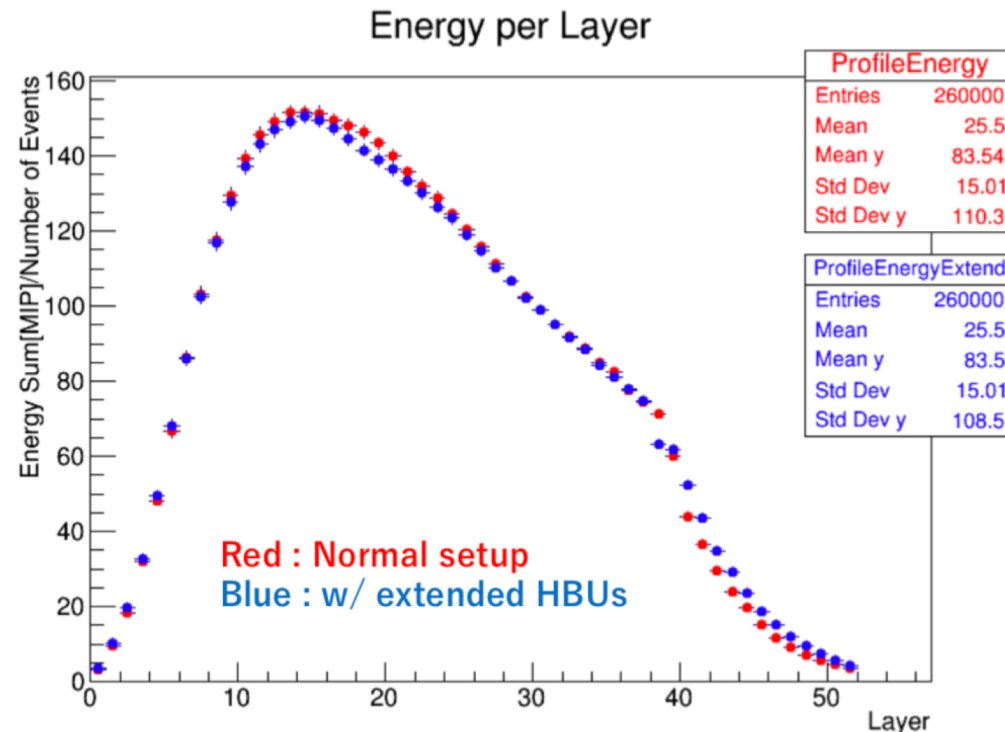
# Linearity

- Check linearity of Pion data
- Fit function =  $p0*x + p1$
- Error :  $\sigma$
  
- Linearity seems good.
  - 120 GeV and 160 GeV runs are out of fitting line a bit.
  - Need a better optimal weight(?) because a tail appears in high energy



# Todo

- **Combine this weight and the ratio of normal TC and extended TC.**
  - Solve many problem on MC/Data comparison and differences of normal/extended TC.



backup

# Fit Parameters

<b>energy</b>	<b>peak</b>	<b>sigma</b>
<b>40</b>	<b>1381.41</b>	<b>158.56</b>
<b>80</b>	<b>2698.21</b>	<b>245.617</b>
<b>120</b>	<b>4091.95</b>	<b>322.033</b>
<b>160</b>	<b>5253.23</b>	<b>363.807</b>