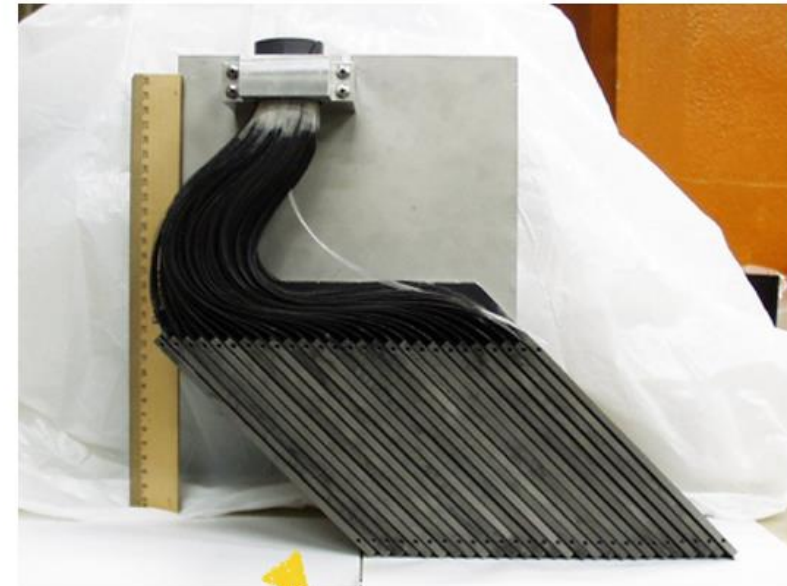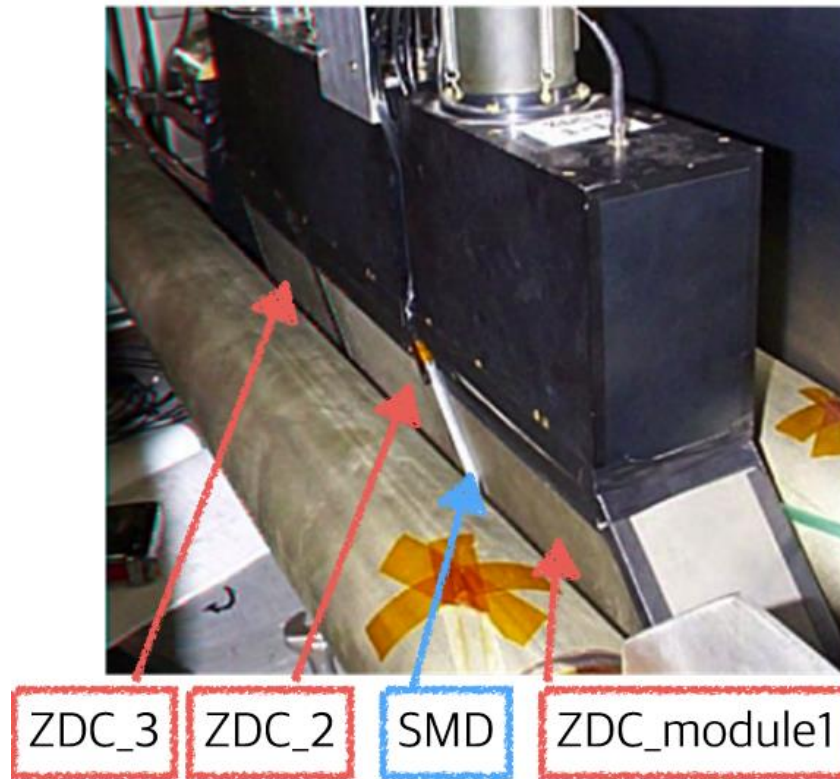# Student self introduction

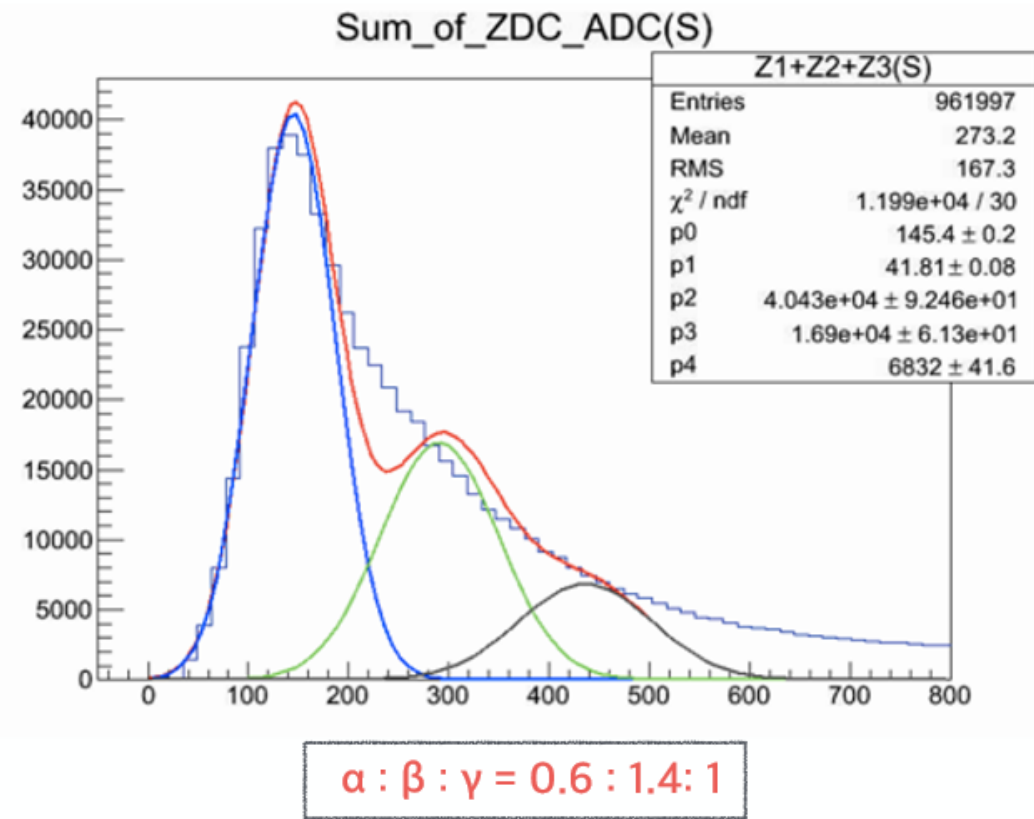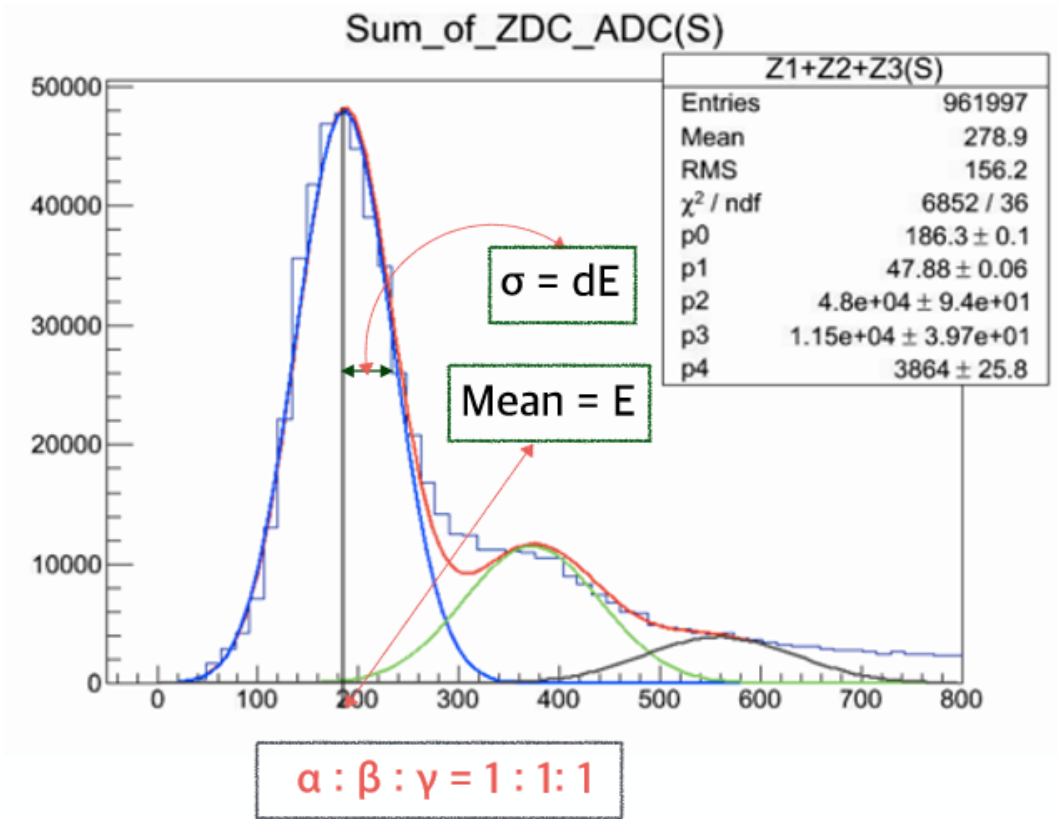Korea Univ.

Jaehee Yoo

History

- I was born and raised in Seoul, Korea.

- 2006 – 2012
  - B.A in Physics, Korea University

- 2013 – 2015
  - Graduate student in Nuclear Physics Lab.(prof. Hong), Korea University (2013)
  - Participated in the development of the prototype low energy neutron detector for LAMPS at RAON :
     assembly, test and analysis of the real-size prototype (2013~2014)
  - Join PHENIX experiment : took Shift (Run14, Run15)

- 2015 - 2016
  - Maintenance of the Local Polarimeter in PHENIX(from August ,2015)
  - Calibration Study and Data taking for gain matching of Shower Max Detector in PHENIX
  - Analysis of gain calibration for each module of Zero Degree Calorimeter and ZDC expert work

ZDC calibration

ZDC_3 | ZDC_2 | SMD | ZDC_module1

SMD

ZDC

ZDC energy = α*[ADC - pedestal]_1 + β*[ADC - pedestal]_2 + γ*[ADC - pedestal]_3

Sum_of_ZDC_ADC(S)

Z1+Z2+Z3(S)	
Entries	961997
Mean	278.9
RMS	156.2
χ^2 / ndf	6852 / 36
p0	186.3 ± 0.1
p1	47.88 ± 0.06
p2	$4.8e+04 \pm 9.4e+01$
p3	$1.15e+04 \pm 3.97e+01$
p4	3864 ± 25.8

σ = dE

Mean = E

$\alpha : \beta : \gamma = 1 : 1 : 1$

Sum_of_ZDC_ADC(S)

Z1+Z2+Z3(S)	
Entries	961997
Mean	273.2
RMS	167.3
χ^2 / ndf	1.199e+04 / 30
p0	145.4 ± 0.2
p1	41.81 ± 0.08
p2	$4.043e+04 \pm 9.246e+01$
p3	$1.69e+04 \pm 6.13e+01$
p4	6832 ± 41.6

$\alpha : \beta : \gamma = 0.6 : 1.4 : 1$

- Single neutron hit make specific Gaussian distribution.
  – Single neutron energy = α(1st module $_{deposit\ energy}$) + β(2nd module) + γ(3rd module)

  -> If α, β, γ are correct values, **dE/E** must be minimum value.

- For exemple, ($\alpha : \beta : \gamma = 1 : 1 : 1$) dE/E = 25.7%
  ($\alpha : \beta : \gamma = 0.6 : 1.4 : 1$) dE/E = 28.8%

  -> $\alpha : \beta : \gamma = 1 : 1 : 1$ is more appropriate for ZDC gain than $\alpha : \beta : \gamma = 0.6 : 1.4 : 1$
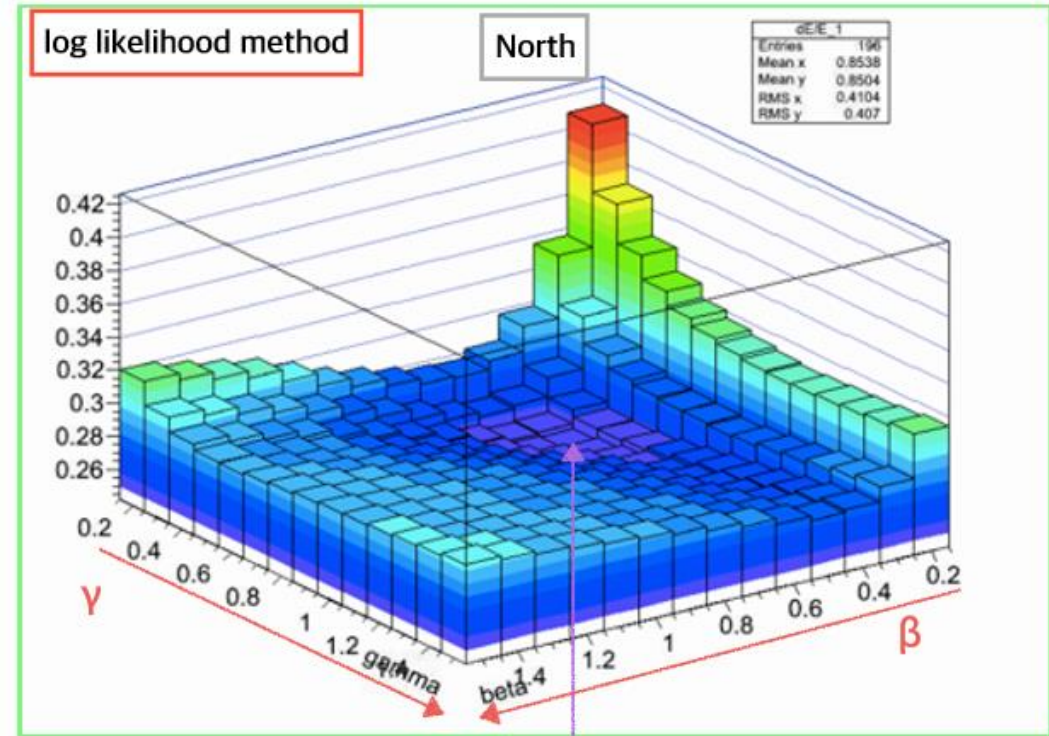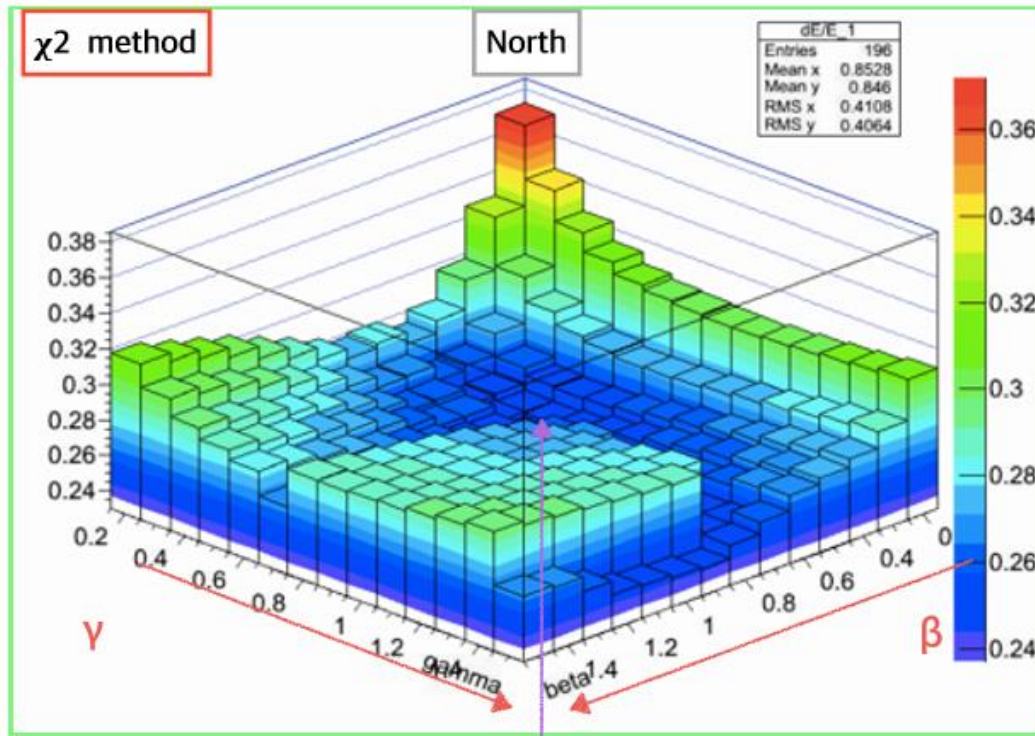
4
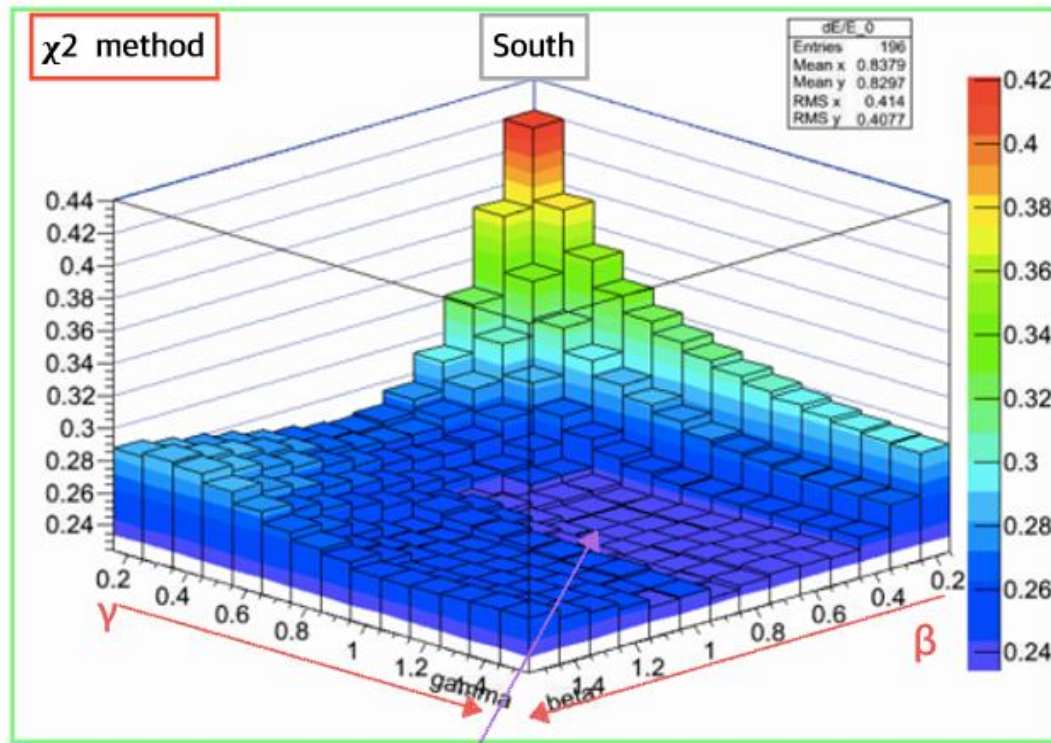
β=0.7, γ = 0.6 , dE/E = 0.234
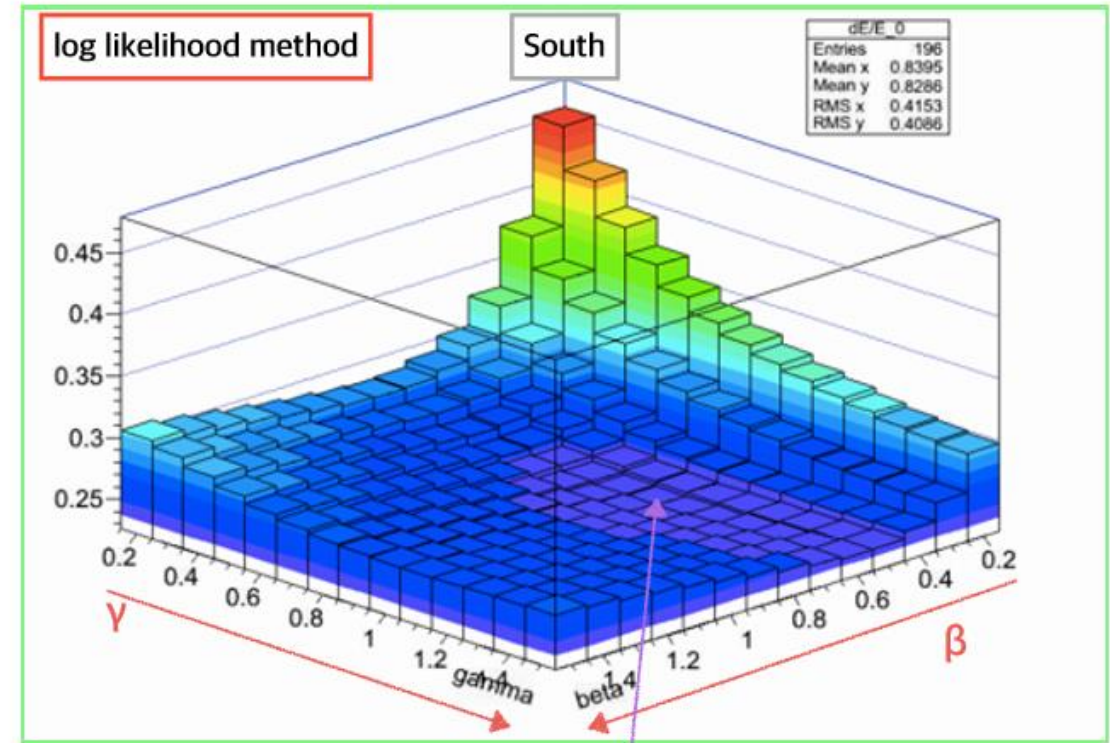
β=0.6, γ = 0.9 , dE/E = 0.237

- Very similar results.

- Gain is different in two different fitting method.
  β=0.7, γ = 0.6   —>   β=0.6, γ = 0.9

β=0.8, γ = 0.7 , dE/E = 0.237

β=0.5, γ = 0.5 , dE/E = 0.250

- A little different results.
  And the step near gamma=1.5 disappeared by using log likelihood method.

- Gain is different in two different fitting method.
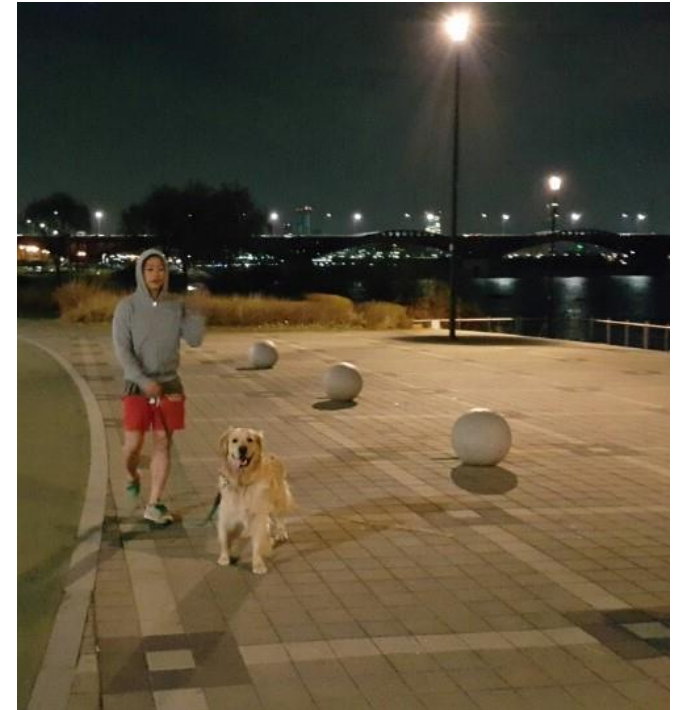 β=0.8, γ = 0.7   —>   β=0.5, γ = 0.5

About me

- **Hobby**

● Swimming

● Basketball

● Cycling

● Singing

Thank you.