進捗報告

2015.02.28 – 2015.03.06

DOI-PET/WLSF

日本医学物理学会CyPos提出完了
GSO+Y-11: ReAnalysis
GAGG+R-3: Setup

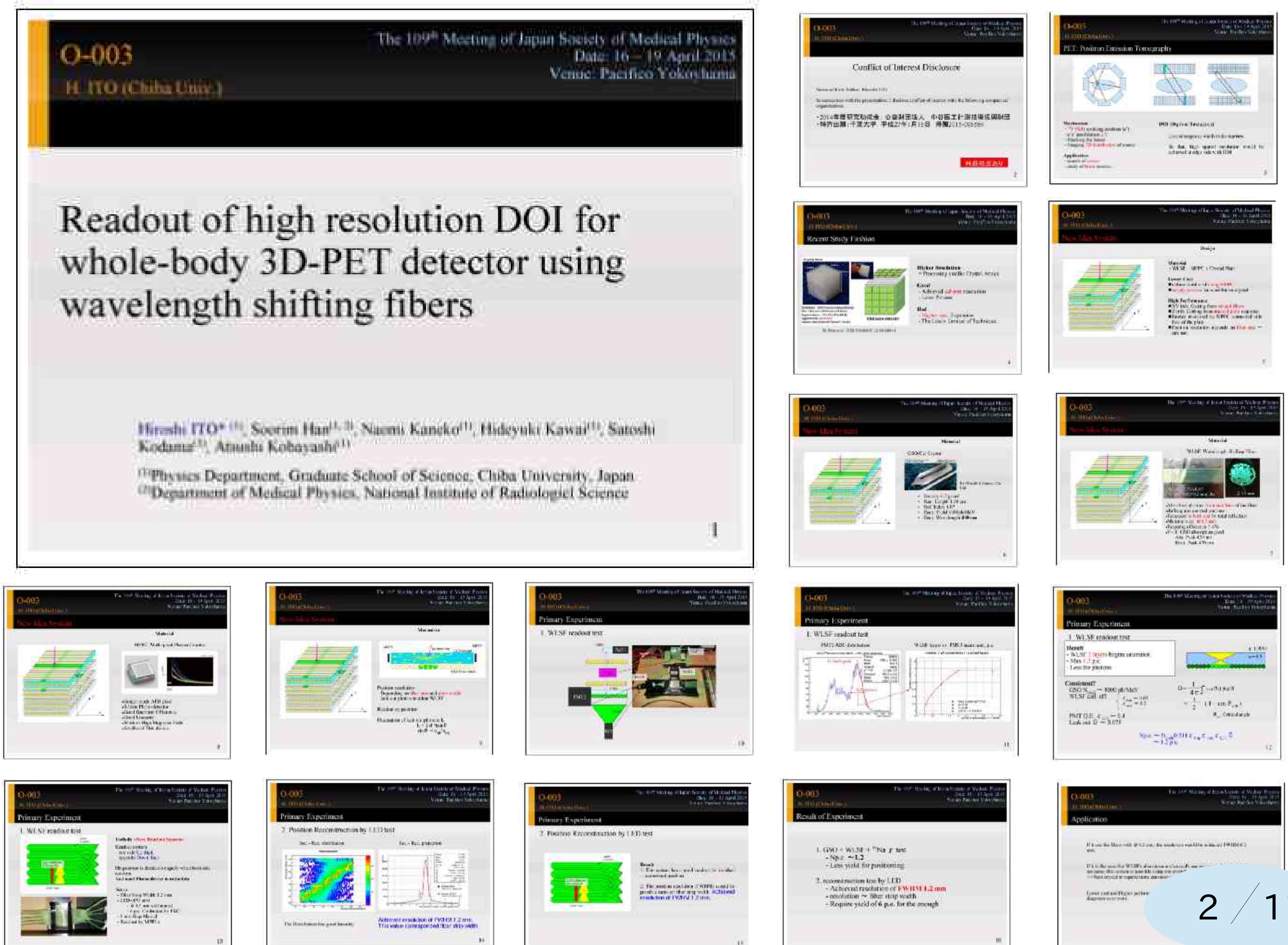
M-ACC

LEPS II Detector Meeting 準備
日本物理学会発表準備

SrCounter

PoS(TIPP2014)242 Accept

日本医学物理学会CyPos登録完了



GSO+Y-11: ReAnalysis

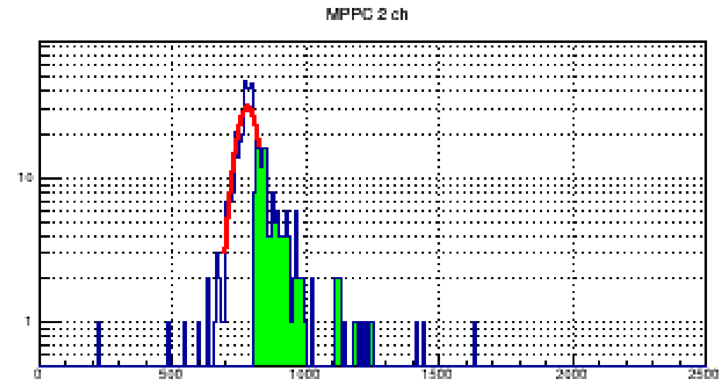
modification

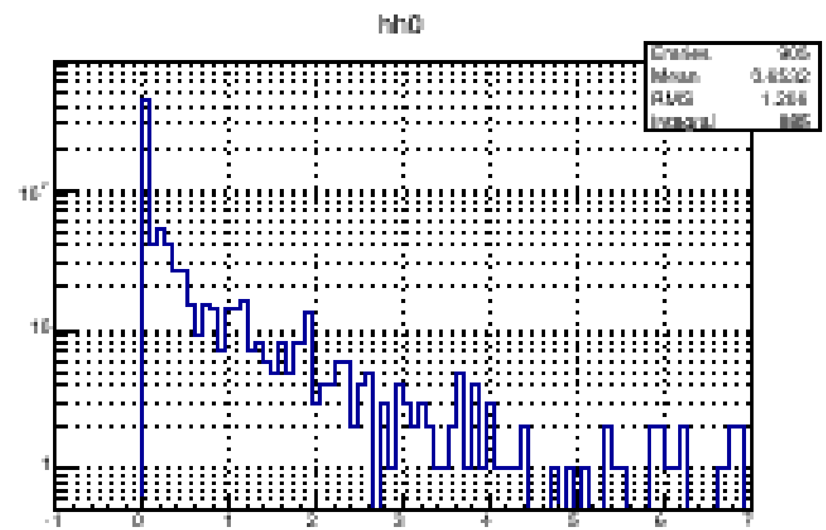
ADC Distribution

(1) Pedestal Mean:
Gaussian Fitting
～800 ADC Channel
(2) The Mean M_{ped} = 0 p.e.
(3) ADC < M_{ped} : = 0 p.e.

p.e. Distribution

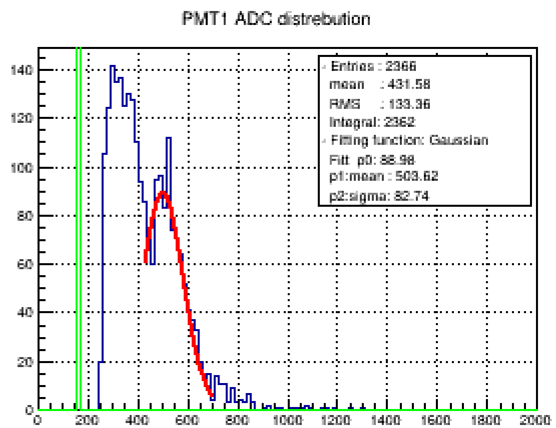
(4) New ROOT file
→ Skimming
(5) 平均光電子数が見積もれる
※ペデスタルが太い

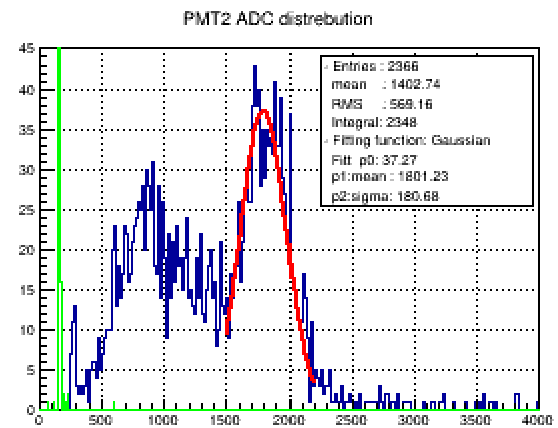


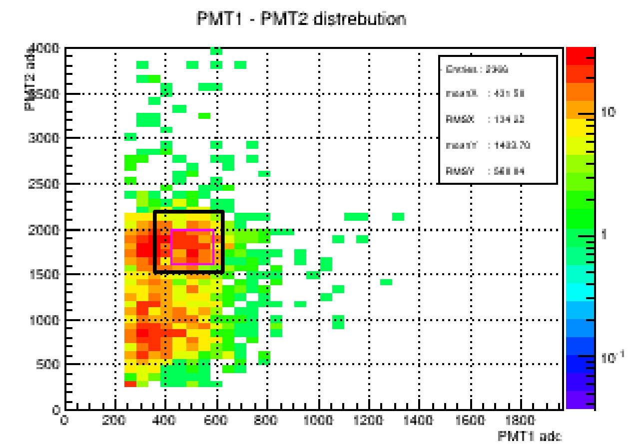


GSO+Y-11: ReAnalysis

Data Tagging







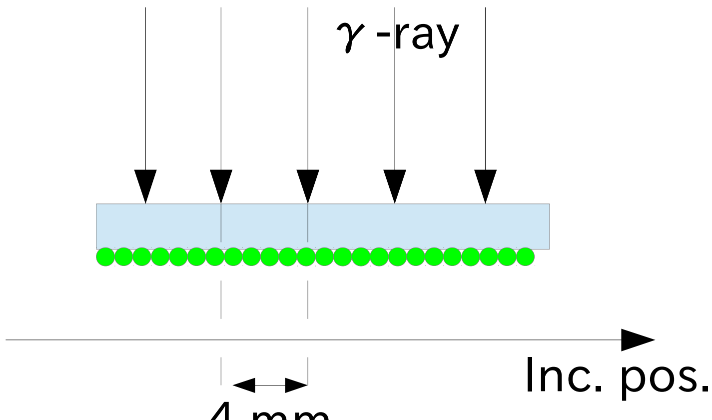
データカット

トリガーカウンター2個が同時に光電効果した事象をpickup

カット範囲はMean ± σ

GSO+Y-11: ReAnalysis

Incident – Reconstruction Positions



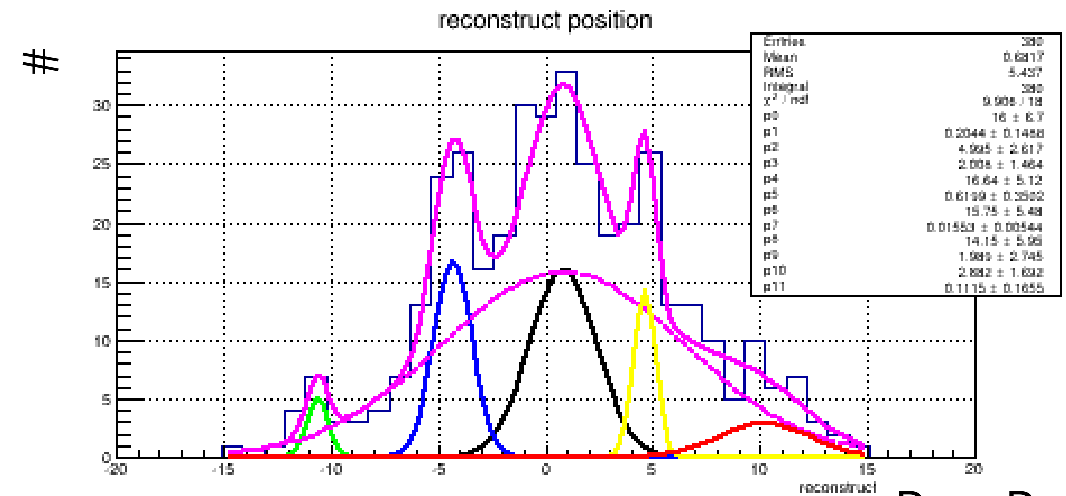
Rec. Pos. = X1 + X2

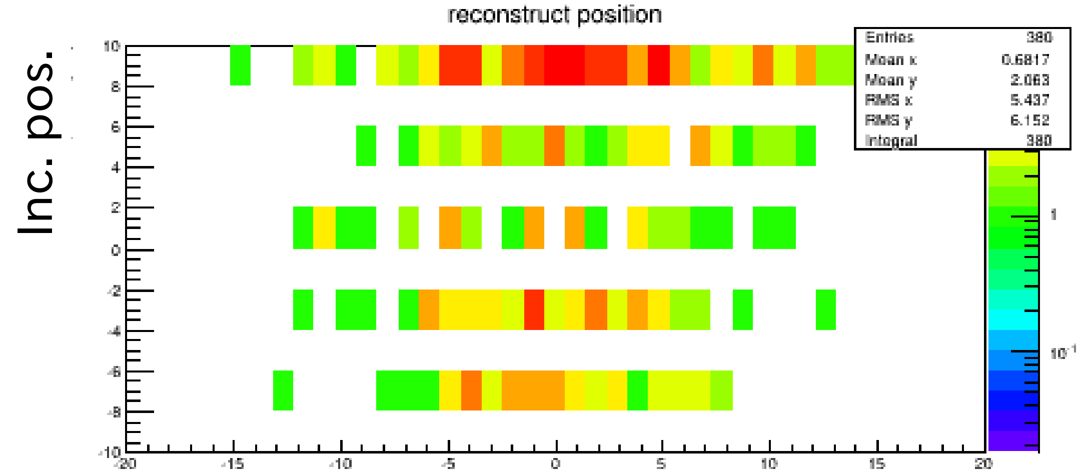
X1 = { ∑ Qi d1 } / {∑ Qi }

X2 = { ∑ Qj d2 } / {∑ Qj }

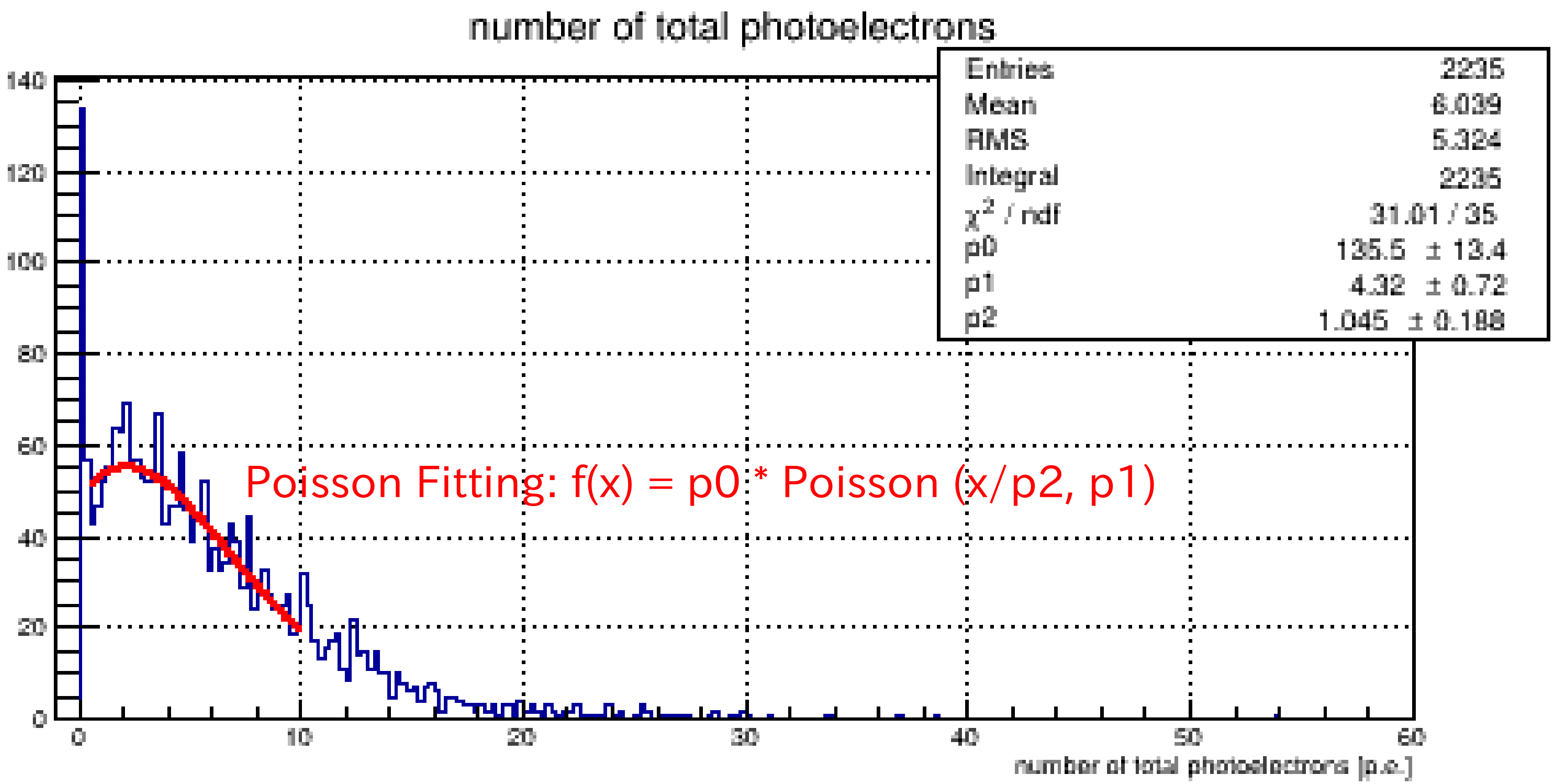
d1 = 6.0 mm, d2 = 1.2 mm

i=0-4 ch, j=5-9 ch





GSO+Y-11: ReAnalysis



- MPPC 10個の合計平均光電子数は4 p.e.？
- 比較するためにはバックグラウンドを引くべきだろ?
- 光電子数ピークが2p.e.ずつというのは
  キャリブレーション合ってる?

GAGG+R-3: Setup

[　] Setup作成 (3/1 – 3/14)
　[OK] R-3 for connecting PMT (3/5)
　1, 2, 3, 4 layers
　[OK] R-3 for connecting 10 MPPCs (3/5)
　　1 layer
　[　] 固定具(木工)実験ジオメトリ作成 (3/8 – 3/10)
　[　] 回路 & DAQ
　[　] MPPCs ReCalibration (3/12 – 3/14)
[　] 実験1: GAGG + R-3 @PMT, Layer vs. p.e.
[　] 実験2: GAGG + R-3 @ MPPCs, Inc. vs. Rec. Pos. (x-axis)
[　] 実験3: GAGG + R-3 @ MPPCs, Inc. vs. Rec. Pos. (z-axis)

スケジュール

LEPS II Detector Meeting 準備

スライド作成

構成内容

1. Introductino: LEPS II ACPlan
2. Index
3. MPPC array type AC desing
4. ELPH Beam test
    - Setup
    - Analysis
    - Result ← まだ完成していない。
5. Discussion
    - その1
    - その2

発表練習

1. 日本後で言いたいことを書く
2. 英語に直す
3. 日本後で自分ツッコミで質疑応答を考える
4. 英語になおす。

[まだ] LEPSのサーバにアップロード
[　　] 河合さんにOKをもらう
本番3/11

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PROCEEDINGS OF SCIENCE

Development of real time ^{90}Sr Counter applying Cherenkov light detection

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Radioisotopes have been emitted around Japan due to a nuclear accident at the Fukushima daiichi nuclear power station in March 2011. A problem is the contaminated water including the atomic nucleus which relatively has a long half-life time such as ^{90}Sr, ^{137}Cs generated from ^{235}U used for nuclear fuel. Internal exposures by ^{90}Sr are more dangerous than ^{137}Cs's because it has a long biological half-life (49years). Therefore, real-time ^{90}Sr counter has been required. It is relatively easy to identify a nucleus emitting gamma ray, but it is more difficult to identify a nucleus emitting pure beta ray such as ^{90}Sr. Typically, measurement of a radioactivity absolute value of ^{90}Sr takes a month at least to give a result. At first, we aim to identify ^{90}Sr / ^{137}Cs by threshold type Cherenkov detection. It needs radiator which has less than 1.0492 of refractive index for identification of β-ray with maximum energy of 2.28 MeV from ^{90}Sr and 1.17 MeV from ^{137}Cs. Recently, The material satisfying this condition does not exist expect the silica aerogel. We produced a prototype counter and evaluated performance. The sensitivity is observed $(5.49 \pm 0.06) \times 10^{-3}$ Hz/Bq and $(1.12 \pm 0.66) \times 10^{-5}$ Hz/Bq of ^{90}Sr and ^{137}Cs, respectively. And the counter achieved $(2.0 \pm 1.2) \times 10^{-3}$ of sensitivity ratio between ^{90}Sr and ^{137}Cs.

Technology and Instrumentation in Particle Physics 2014,
2-6 June, 2014
Amsterdam, the Netherlands

*Speaker.

ANIMMA ポスター発表準備

- TIPPの内容とIEEEの内容をあわせ、プラス修論の内容を加える。
- 林栄精器のPackage後の写真をつくる。
- パンフレット作成(一般用/技術者用)
- ポスター作成
- IEEE Transactionの準備：英文を作成する。

スケジュール

来週の仕事

3/8 – 3/11
DOI-PET/WLSF Setup作成の完了
LEPS II Detector Meeting 発表練習

3/12 – 3/15
MPPC Calibration
HV-Gain
@ PreAmp Gain 150, time Coeff. 50