GFlux

Outline :

- Last Progress
- Basic Idea of Gflux
- Some Calculation
- How it Works
- Next step

Last Progress

- The last Problem is the acceptance that is too small.
- I have already found the problem and (perhaps) the solution
- It is the modification in user_ana file (have just found today)

Basic Idea

- Counting “good” electron in the tagger hodoscope, and then compared with the photon on the target measured with very well detector (TAC Run)
- “good” electron is when left and right TDC hits matches in time along with a match hit in time in E counter.
- This represent by flag 7/15 in TAGR bank
- The “good” electron in each T-counter is measured by sampling, and the probability follow poisson statistic in a defined time window

Some calculation

$$P(x, \mu(\tau)) = \frac{\mu^x}{x!} \cdot \exp(-\mu)$$

$$P^{TS}(N_{\text{hits}} \geq 1) = 1 - P_0^{TS}$$

$$P^{TS}(N_{\text{hits}} \geq 1) = 1 - \exp(-R^{TS} \cdot \tau)$$

$$P^{TS}(N_{\text{hits}} \geq 1) = \frac{N^{TS}_{\text{out-of-time}}}{N^{TS}_{\text{trials}}}$$

$$N^{TS}_{\text{trials}} = N^{S}_{\text{TAGR}} - N^{TS}_{\text{early}}$$

Some calculation

$$R^{TS} = -\frac{1}{\tau} \cdot \ln\left(1 - \frac{N^{TS}_{\text{out-of-time}}}{N^{S}_{\text{TAGR}} - N^{TS}_{\text{early}}}\right)$$

$$N^{TS}_{e^-} = R^{TS} \cdot \text{Clock}^{\text{S}}_{\text{run-gated}} \cdot LT^{S}_{\text{DAQ}}$$

$$LT^{S}_{\text{DAQ}} = \frac{\text{Clock}^{\text{S}}_{\text{busy-gated}}}{\text{Clock}^{\text{S}}_{\text{run-gated}}}$$

$$N^{T}_{e^-} = \sum_{S} N^{TS}_{e^-}$$

Some calculation

$$\epsilon^T = \frac{N^T \cdot \mathrm{TAC}}{N^T}$$

$$N_\gamma^T = \frac{N_{e^-}^T \cdot \epsilon^T}{1 - \alpha}$$

How it works

- The input is BOS file, it will produce some file *.dat and *.hbook (gflux –option file 1 file 2 etc)
- SungKyung has code to process that file further.

Next Step

- Make sure there is no more problem with g8b montecarlo
- After get the angular distribution correctly then start with sungkyung code to get gflux works.