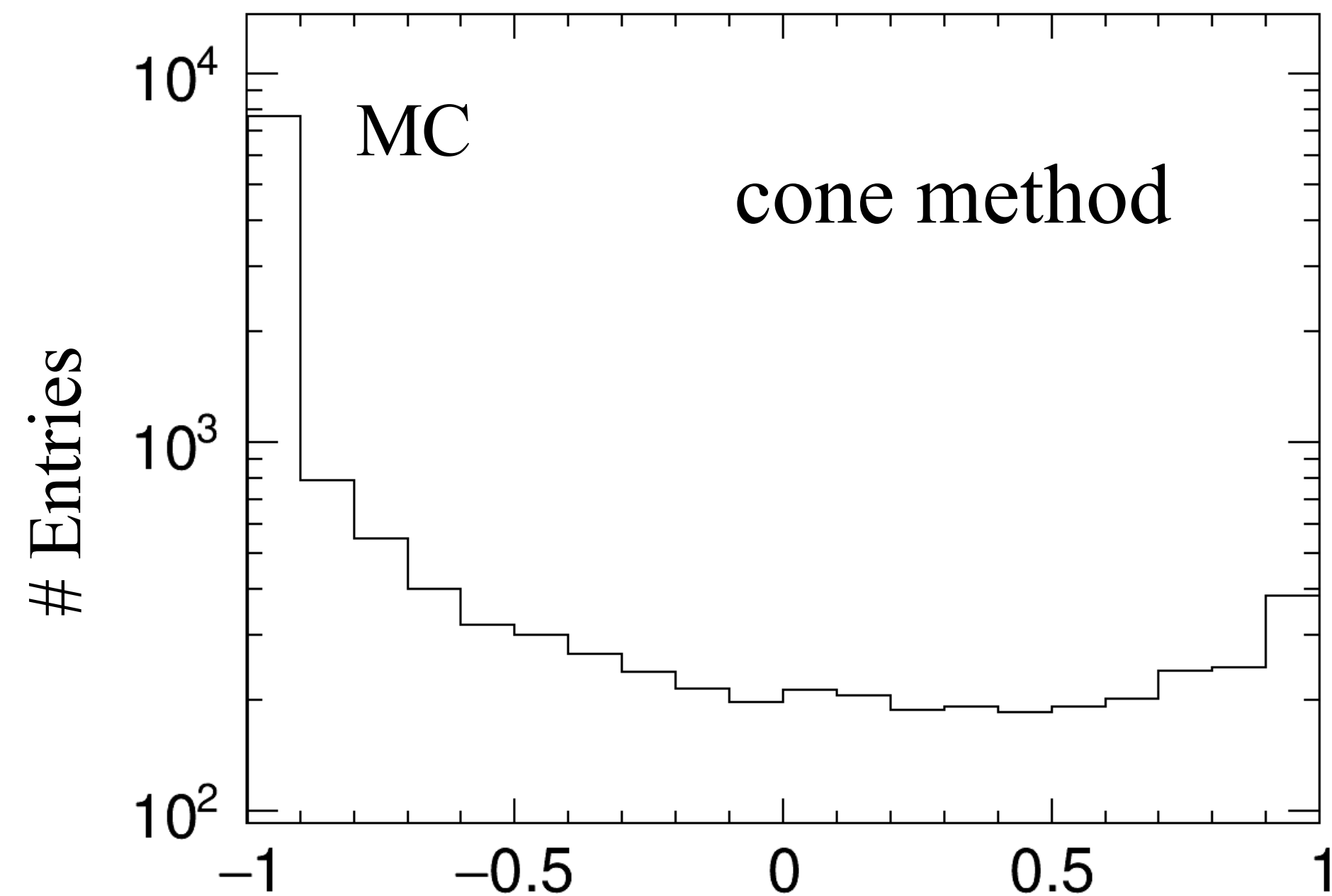
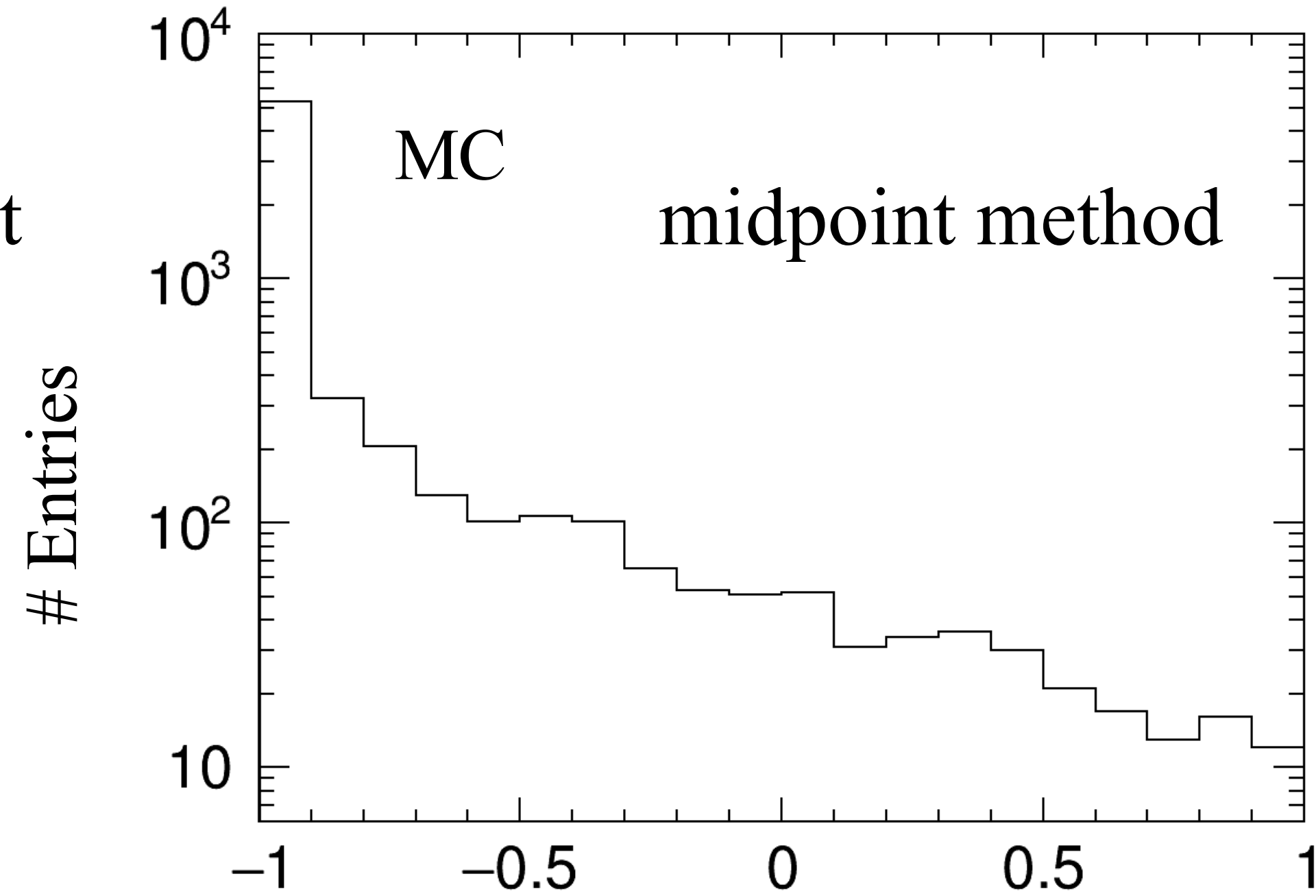


Status report

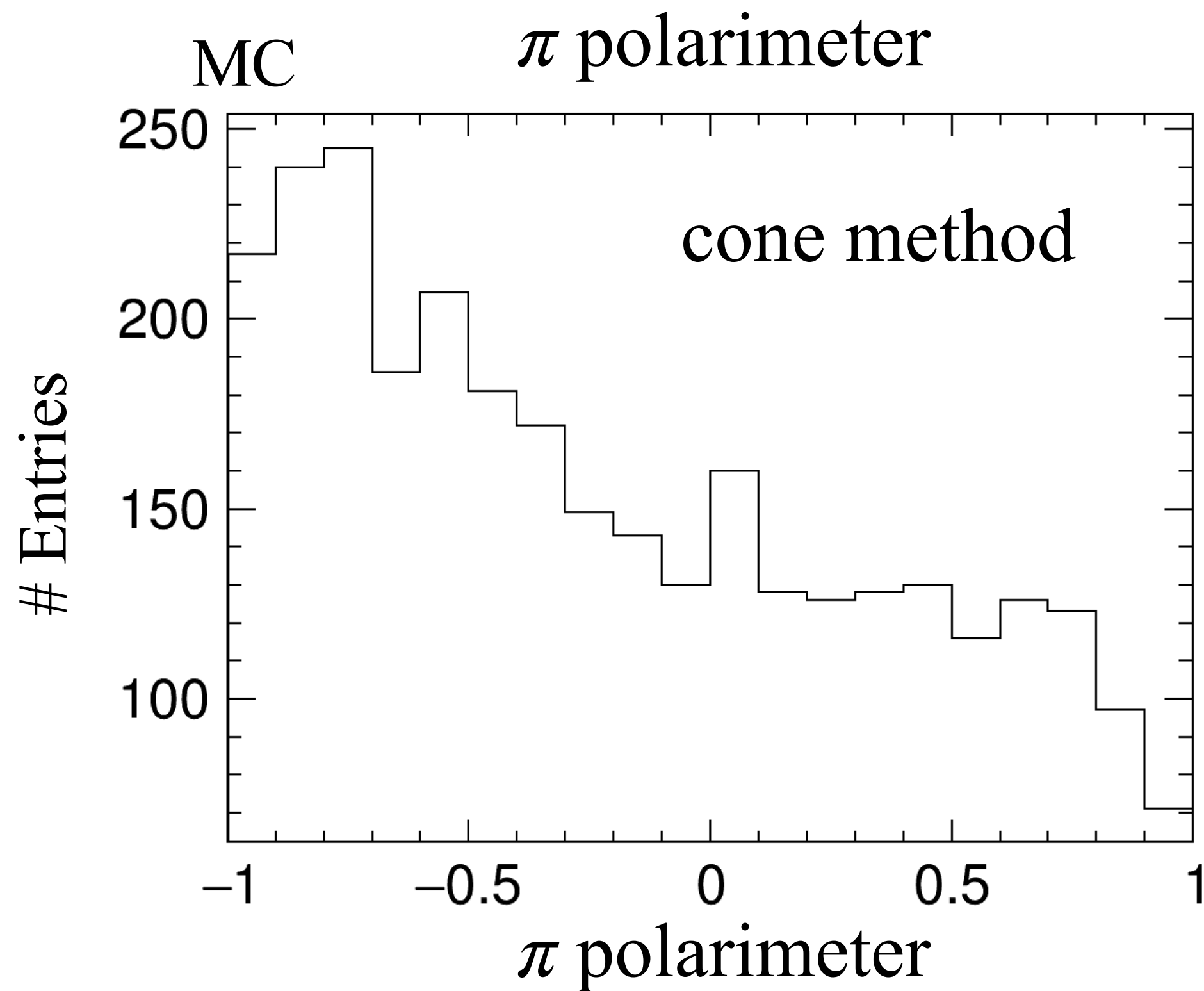
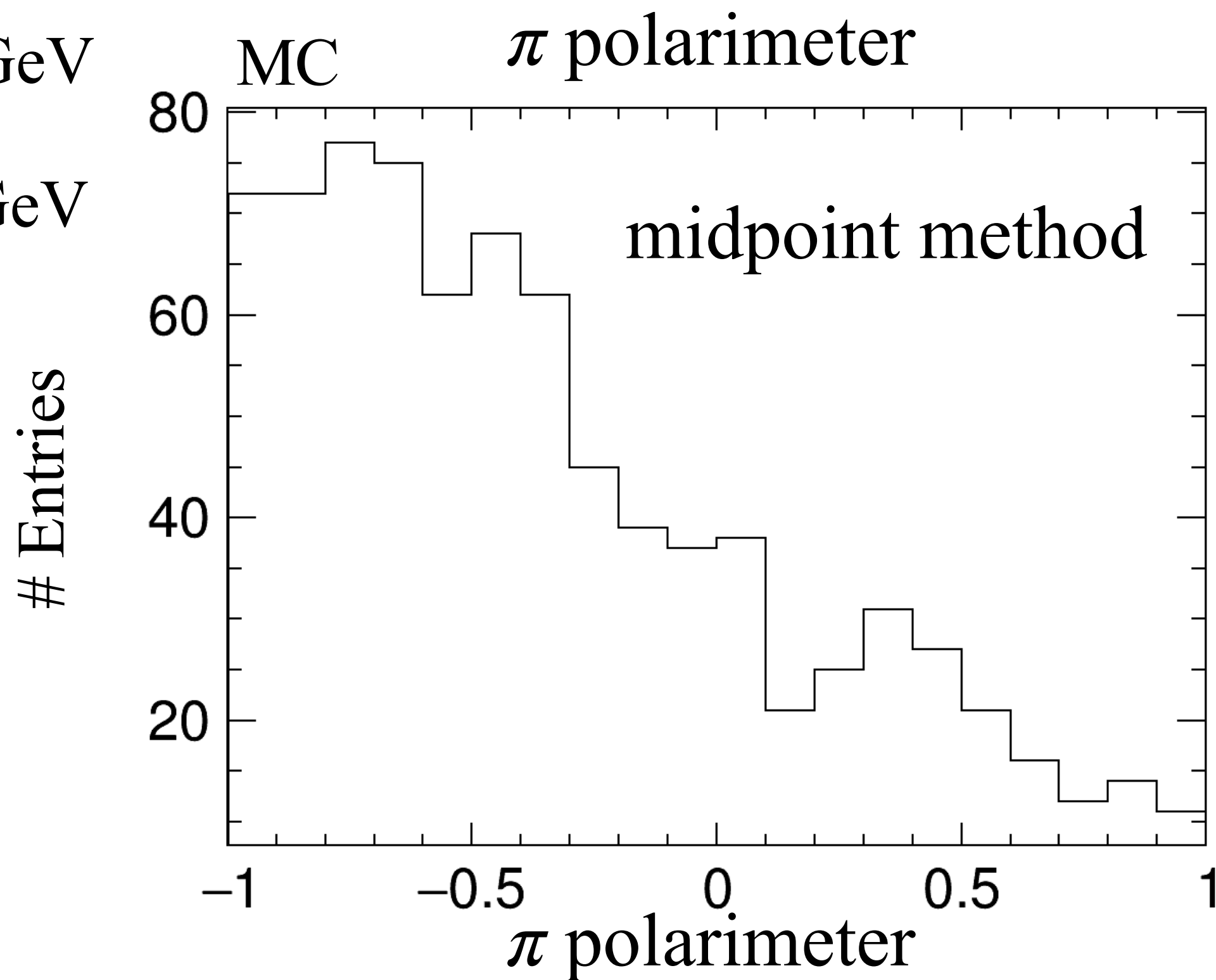
23/04/2021 Keita Yumino

whole event



$m_{\tau\tau} > 240$ GeV

$E_{ISR} < 20$ GeV



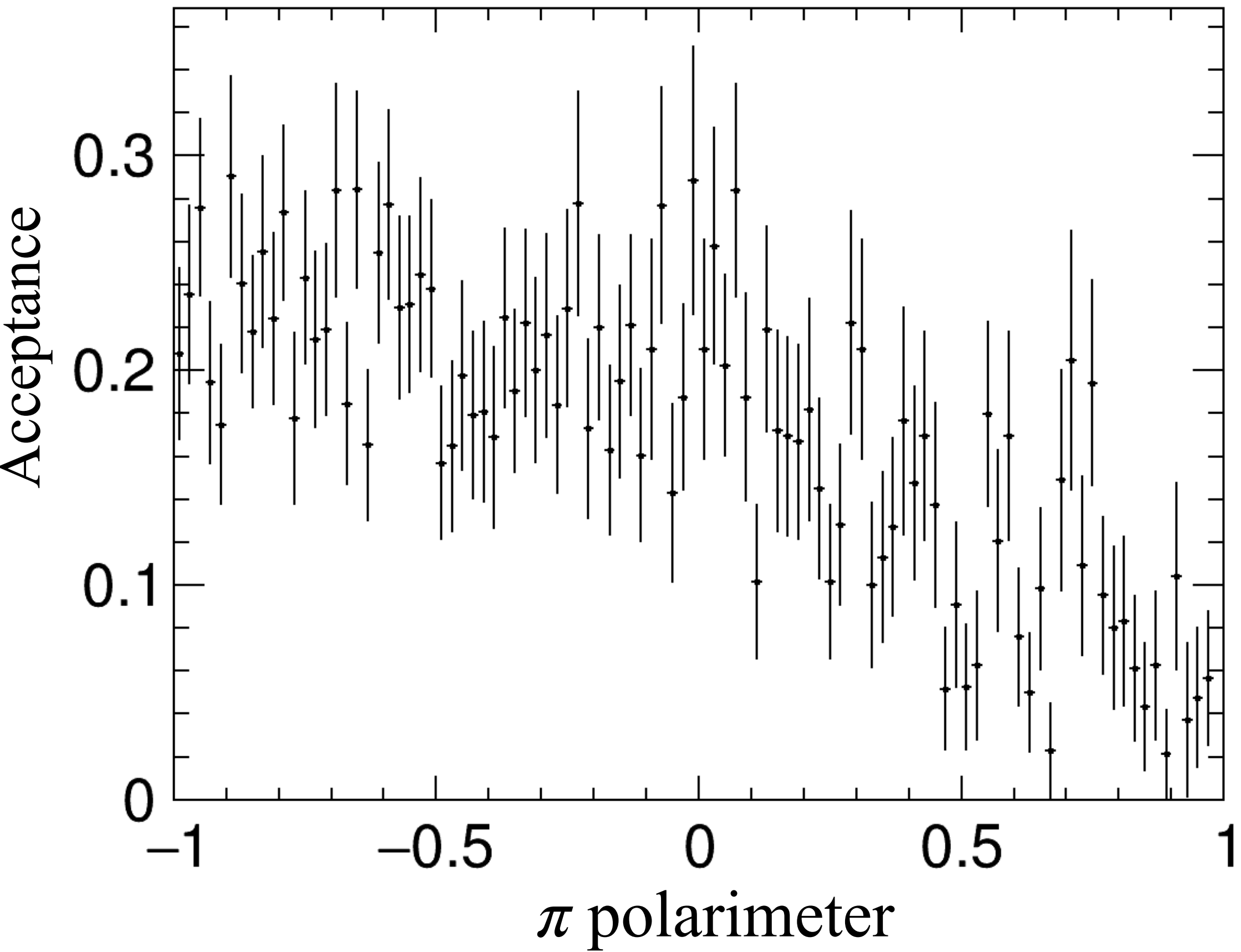
acceptance function

cone method

whole event

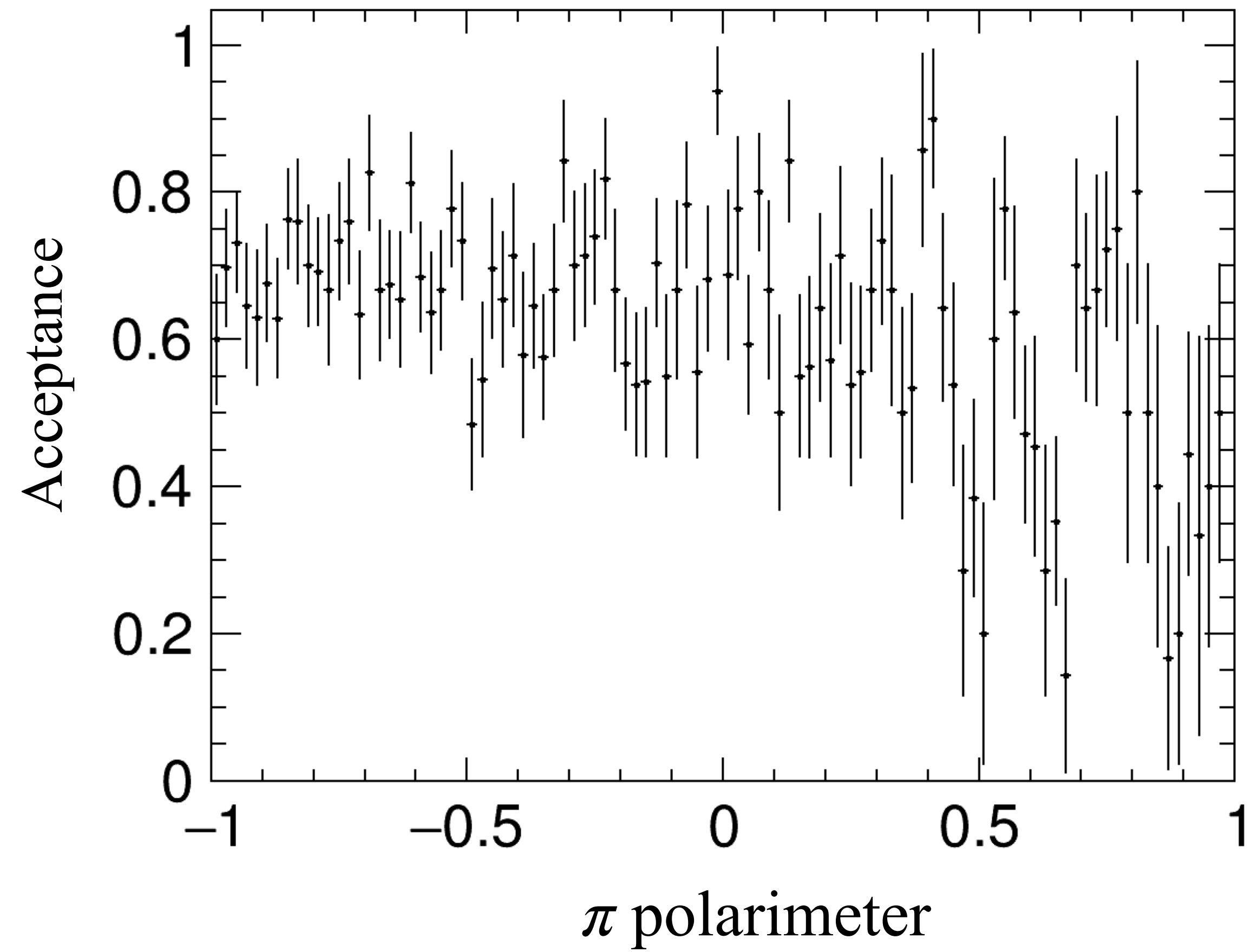
$$m_{\tau\tau} > 240 \text{ GeV}$$

MC



MC

$$E_{ISR} < 20 \text{ GeV}$$



- **Tau decay mode selection at ILC250**

efficiency is not good... (~ 78 % for e&mu decay)

→try to improve

cf. ~98 % at ILC500

forgot to include MyIsolatedLeptonTaggingProcessor

→still not good

~78 %

IsolatedLeptonTaggingProcessor only: ~28 %

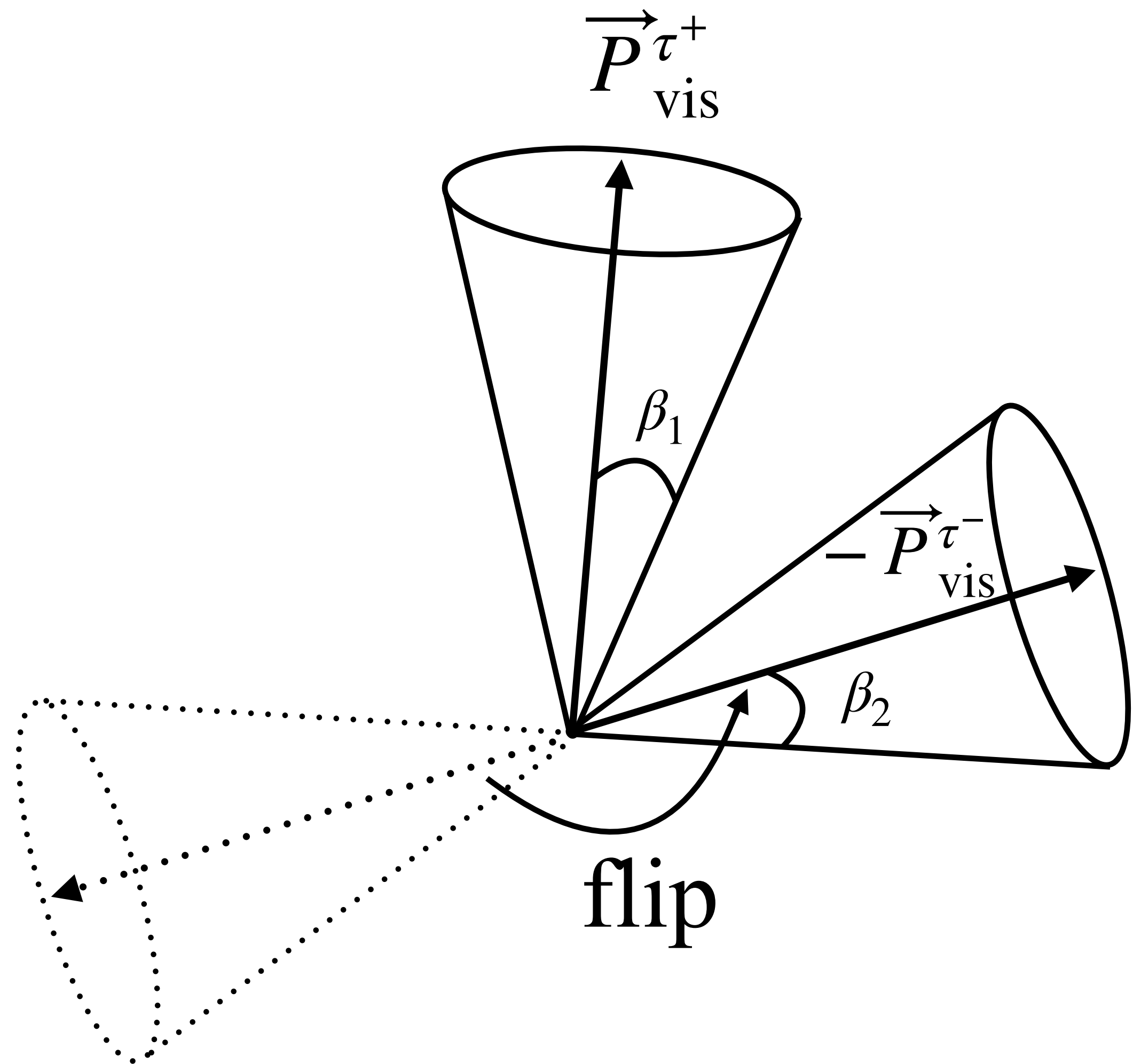
Pandora PID only: ~78 %

IsolatedLeptonTaggingProcessor doesn't seem to work for now

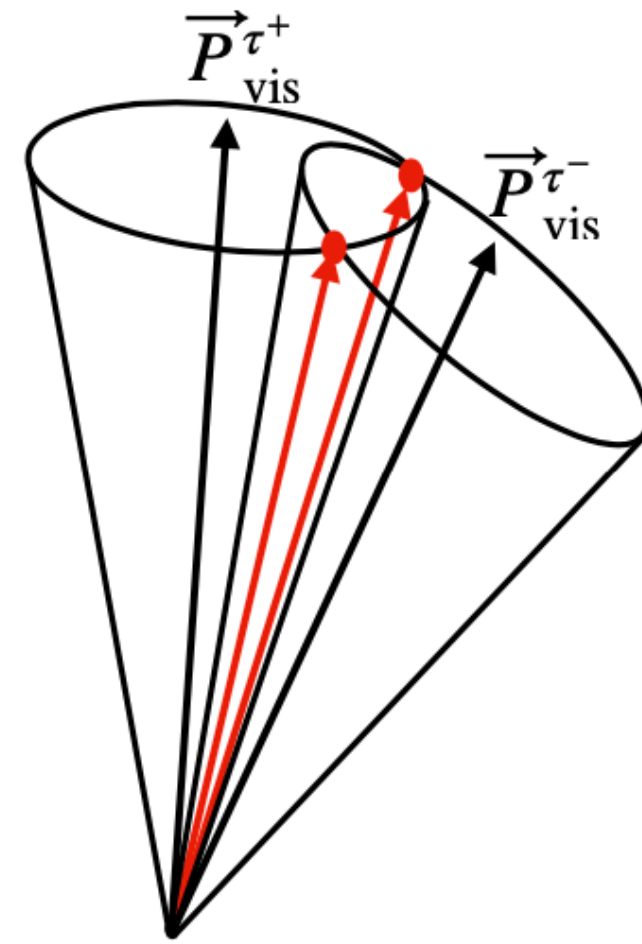
Plan

- SMEFT
 - learn which parameters to use
- neutrino reconstruction
 - use reconstructed particle for “midpoint method”
 - use impact parameter information
- Tau decay mode selection
 - need further improvement

“cone method” to reconstruct tau

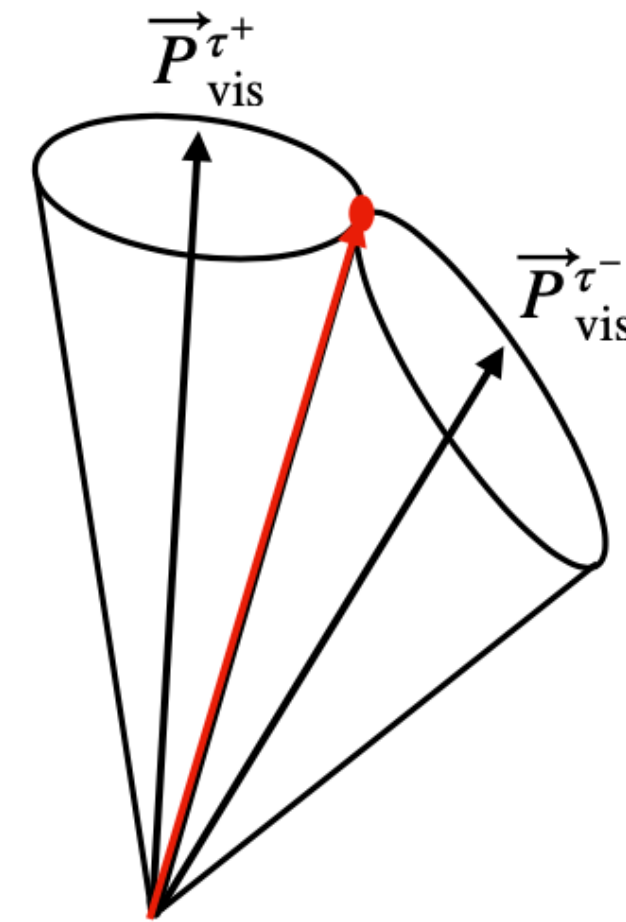


$$\beta_1 + \beta_2 > \beta_{cc}$$



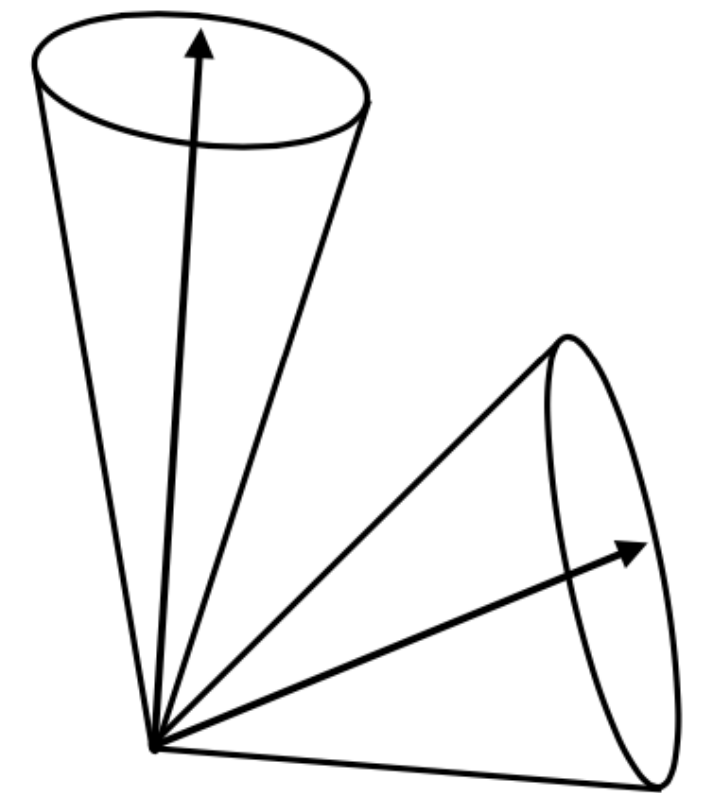
2 possible solutions

$$\beta_1 + \beta_2 = \beta_{cc}$$



1 possible solution

$$\beta_1 + \beta_2 < \beta_{cc}$$

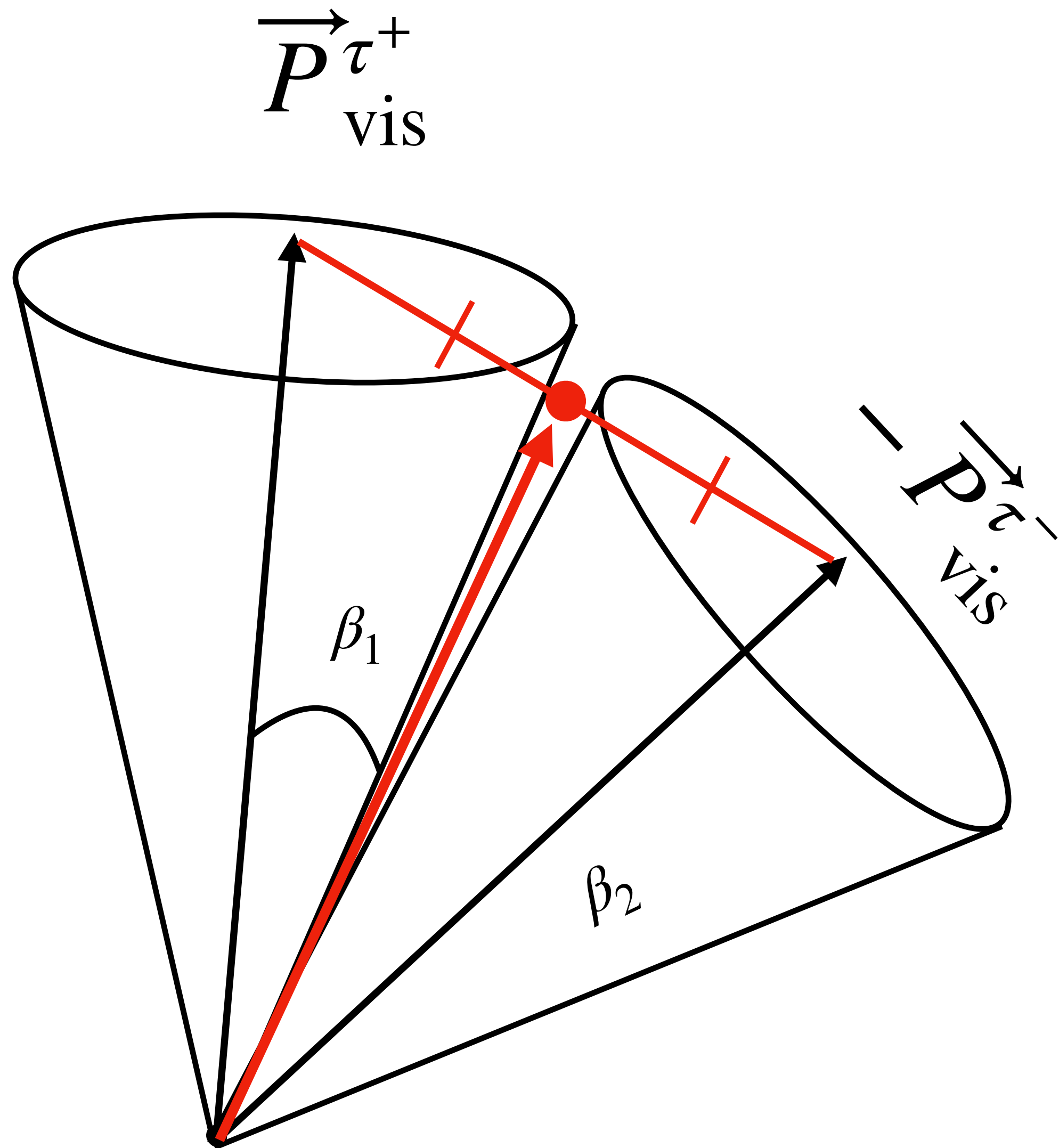


NO solutions

red line: solution = candidate tau direction

but sometimes 1 or 2 solutions can be NO solution depending on the detector resolution

“midpoint method”



sometimes 1 or 2 solutions can be NO solution depending on the detector resolution

→ take a midpoint of them and use **this new vector** as a solution