ORCA meeting
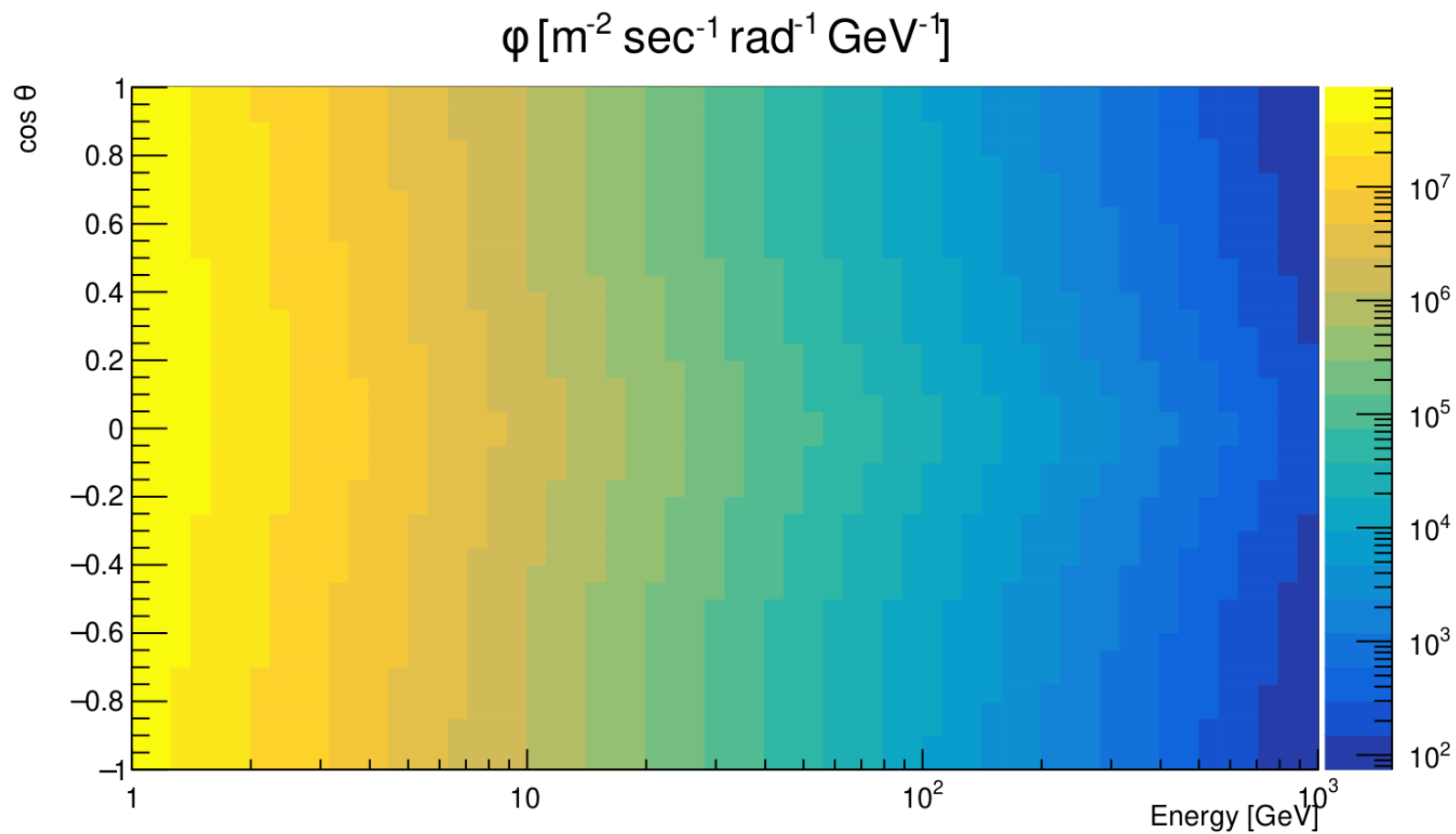
Lodewijk Nauta
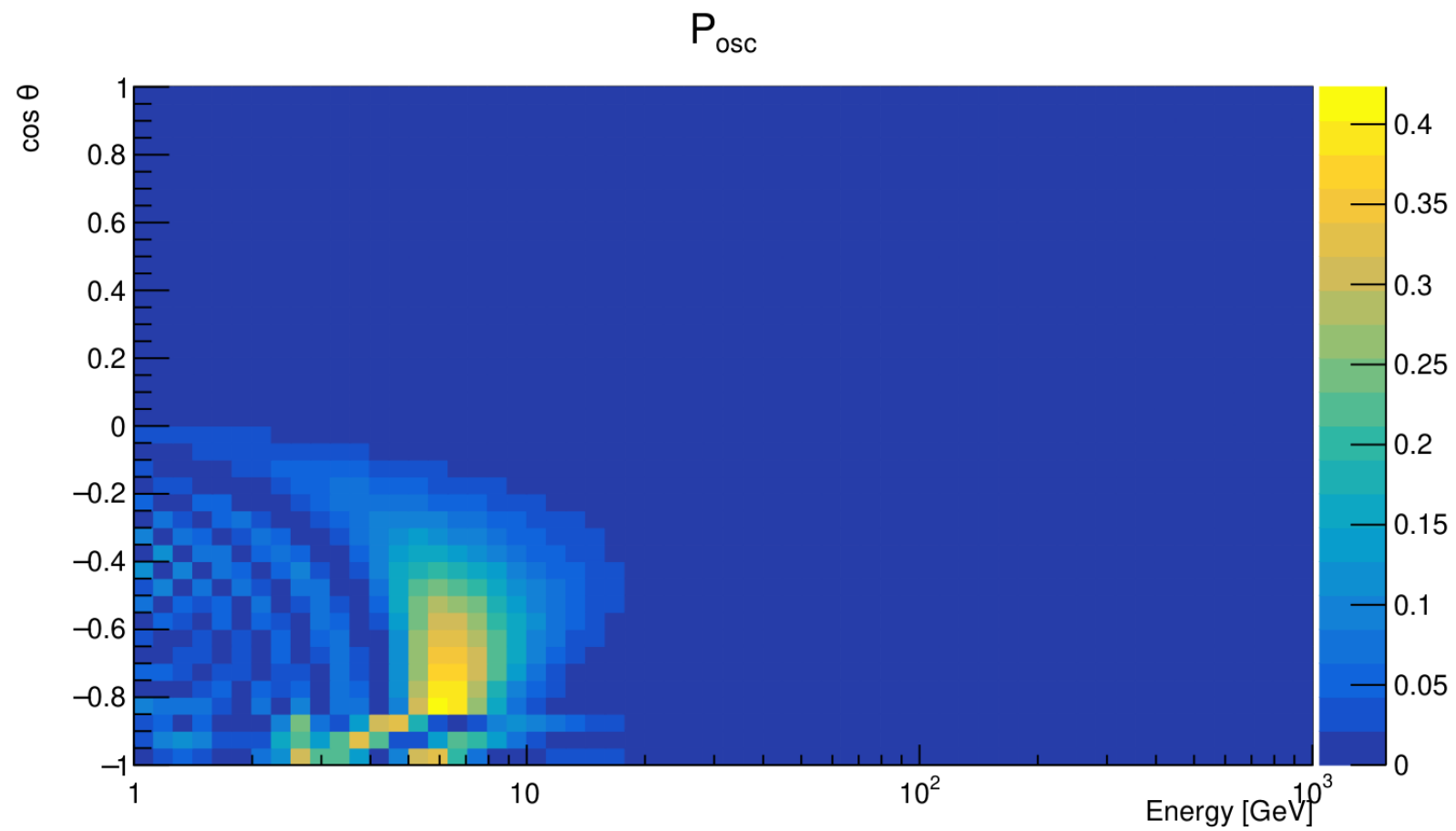
Nikhef

2020-12-18
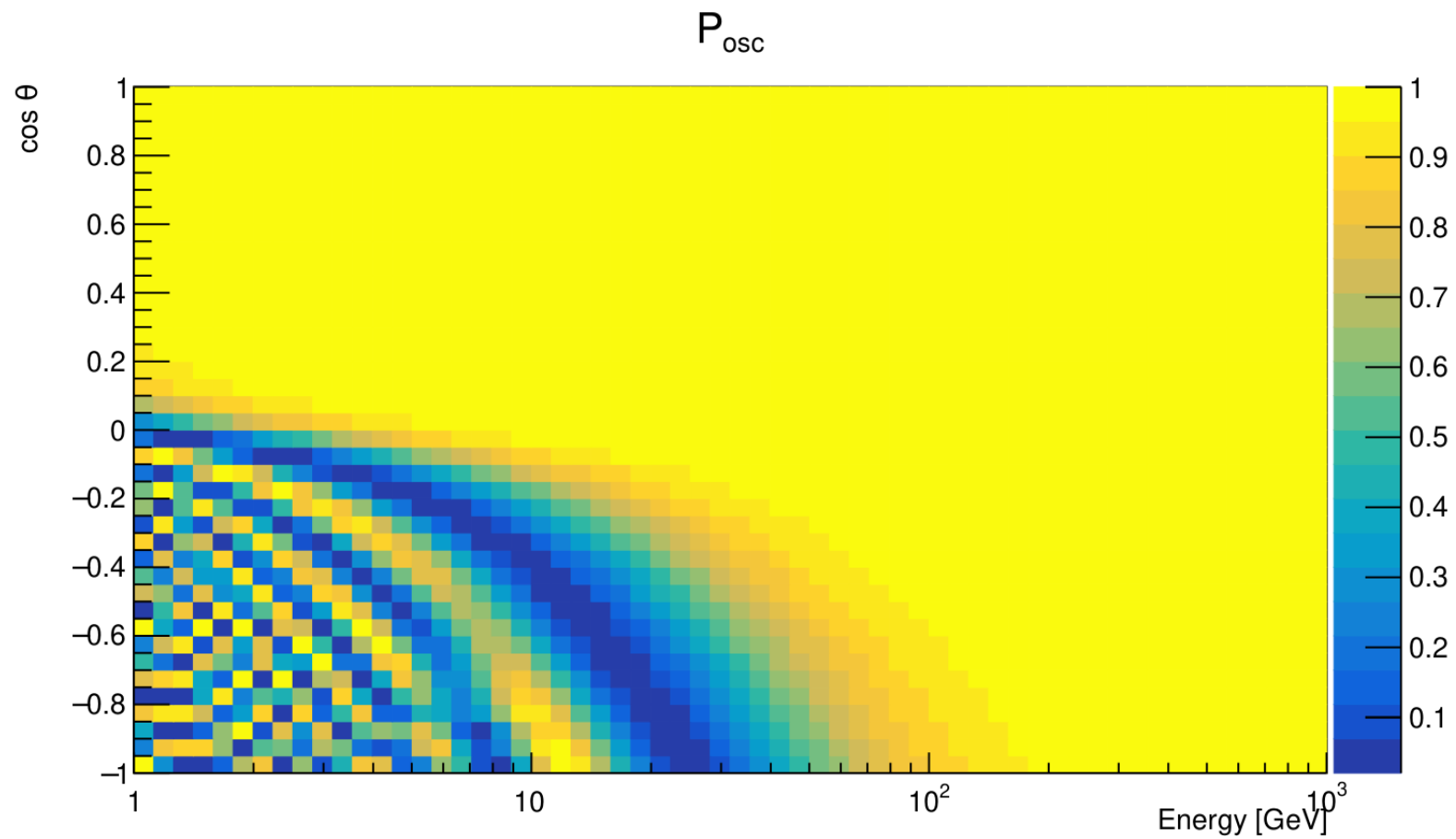
MONA initial flux [nu-mu]
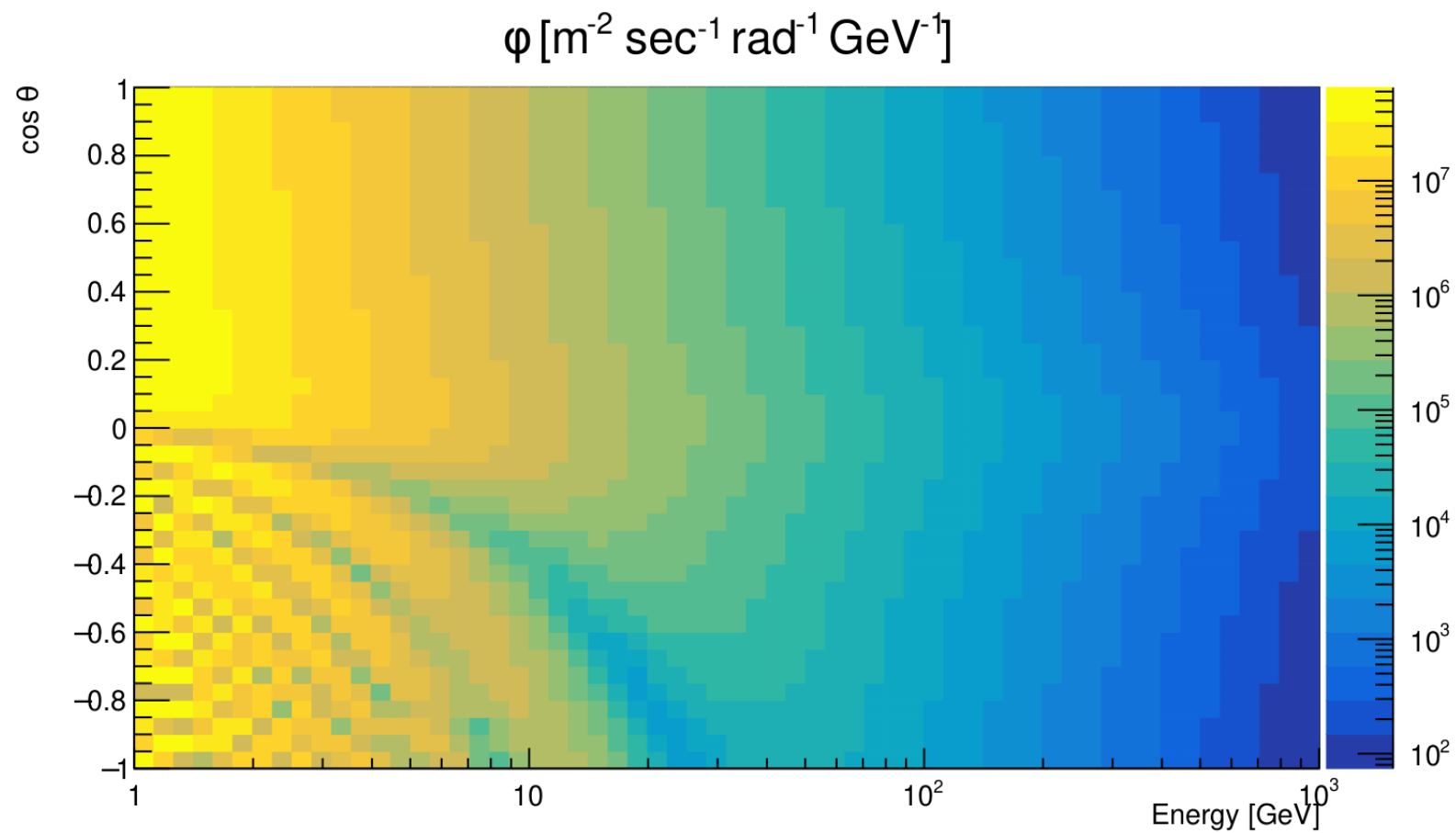
MONA P(e->mu)

MONA P(mu->mu)

MONA oscillated flux [nu-mu]

$\varphi \, [\text{m}^{-2} \, \text{sec}^{-1} \, \text{rad}^{-1} \, \text{GeV}^{-1}]$
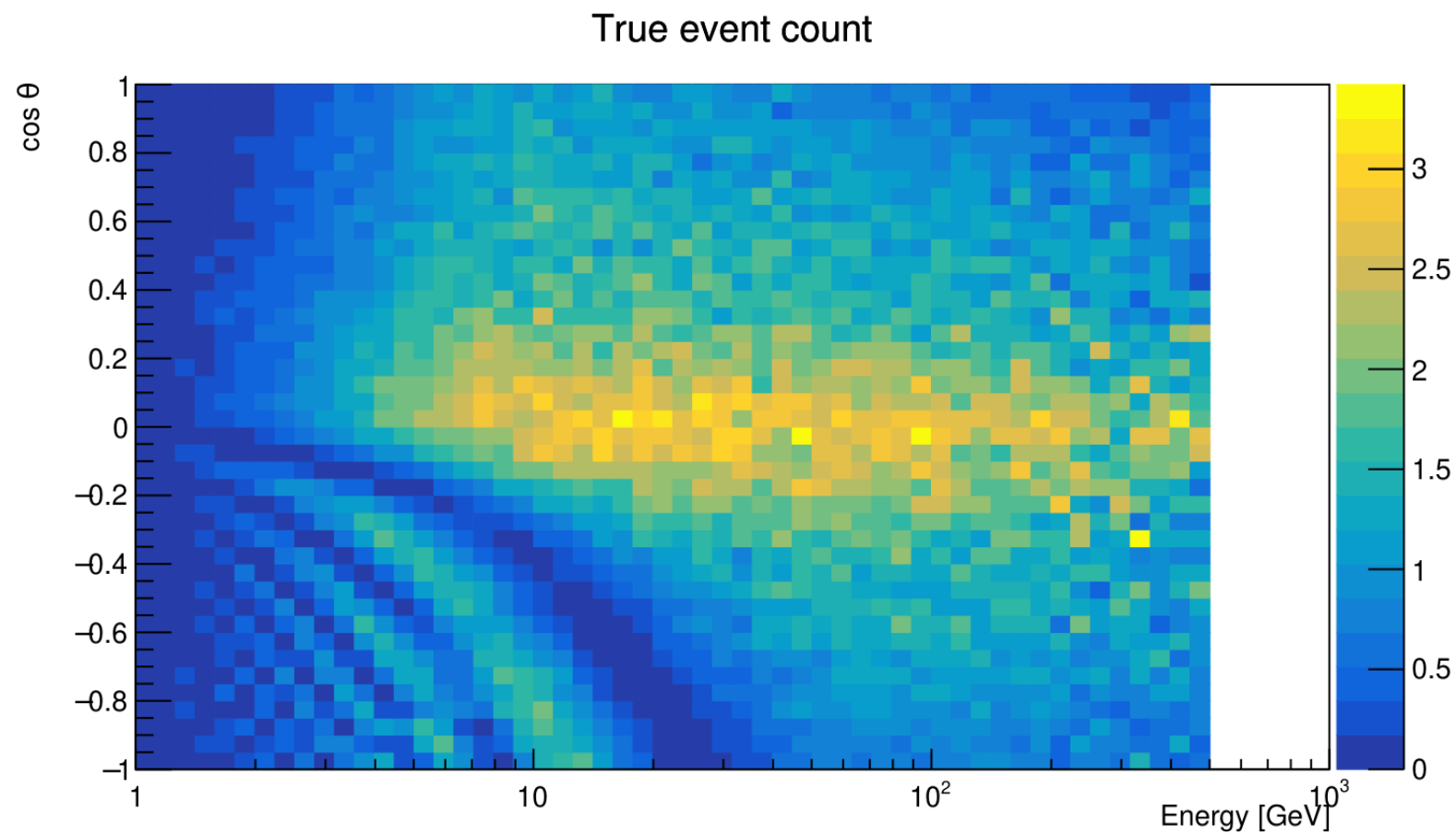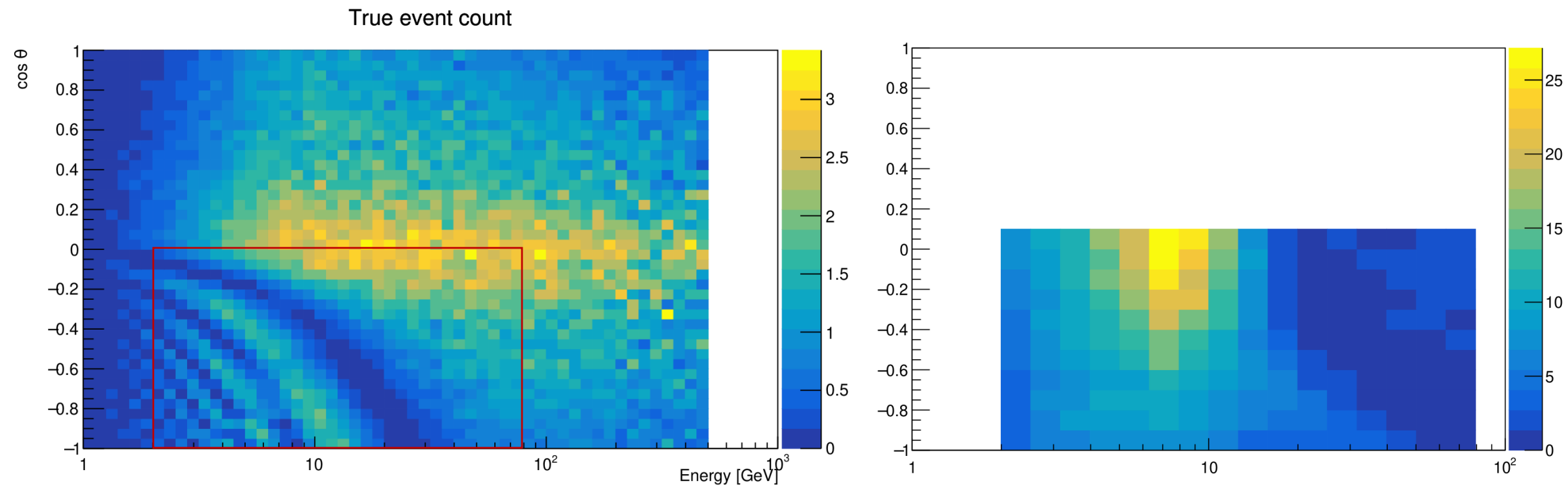
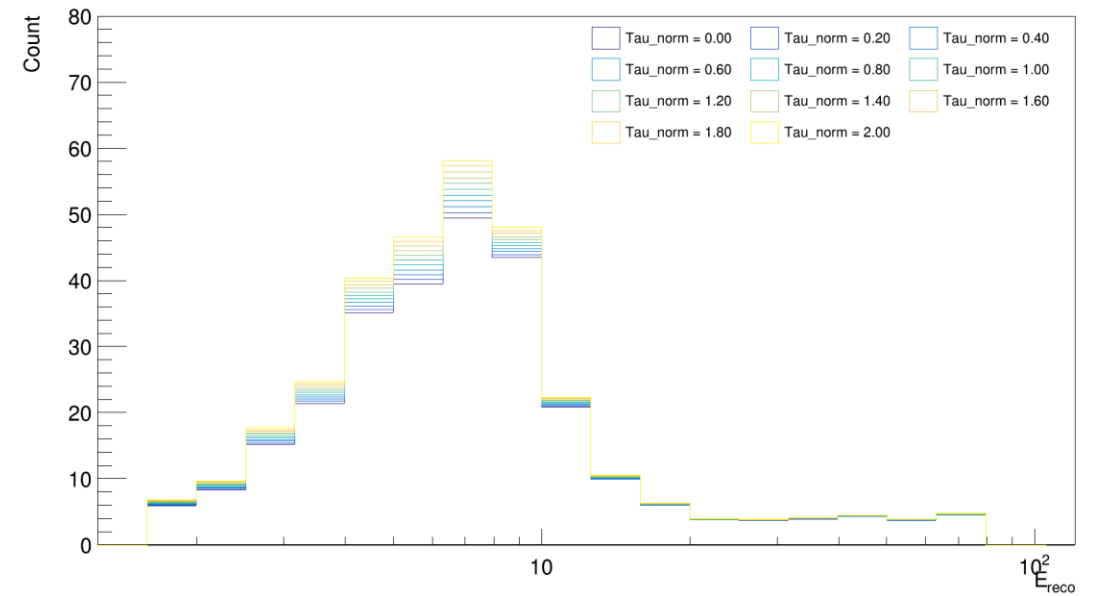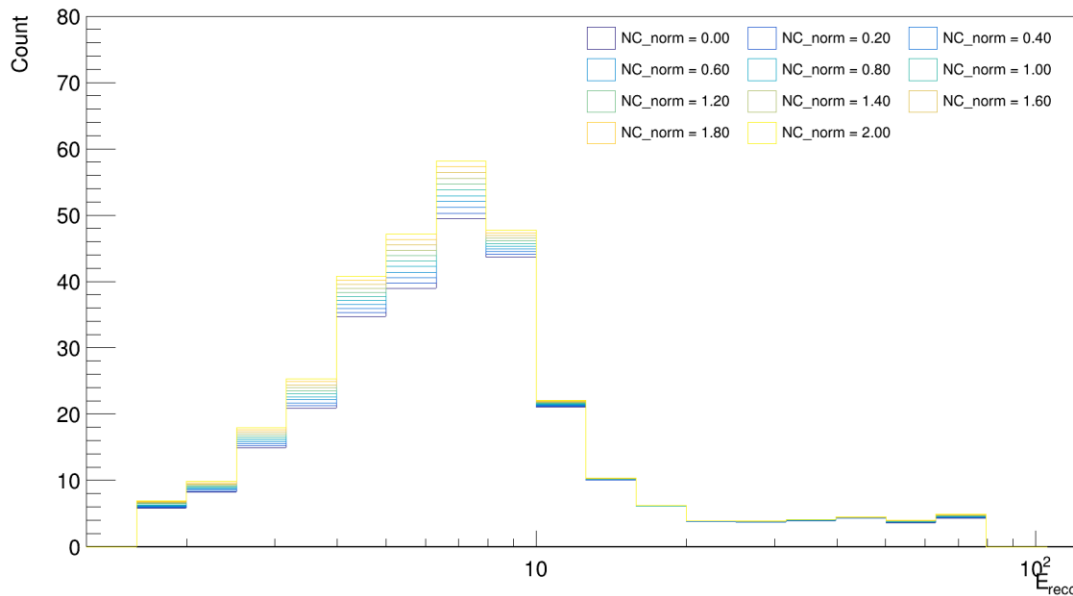# MONA cross section [nu-mu]
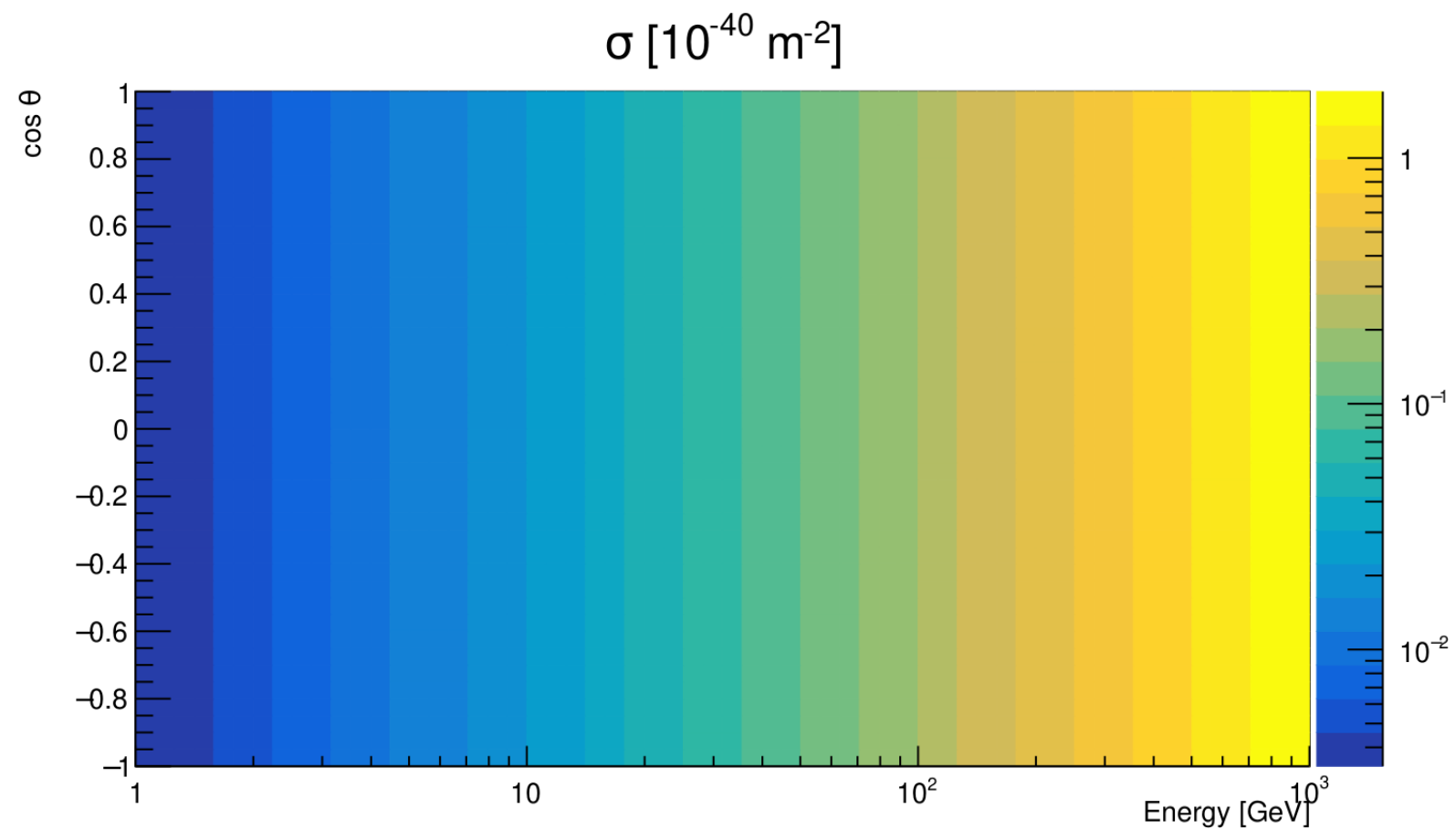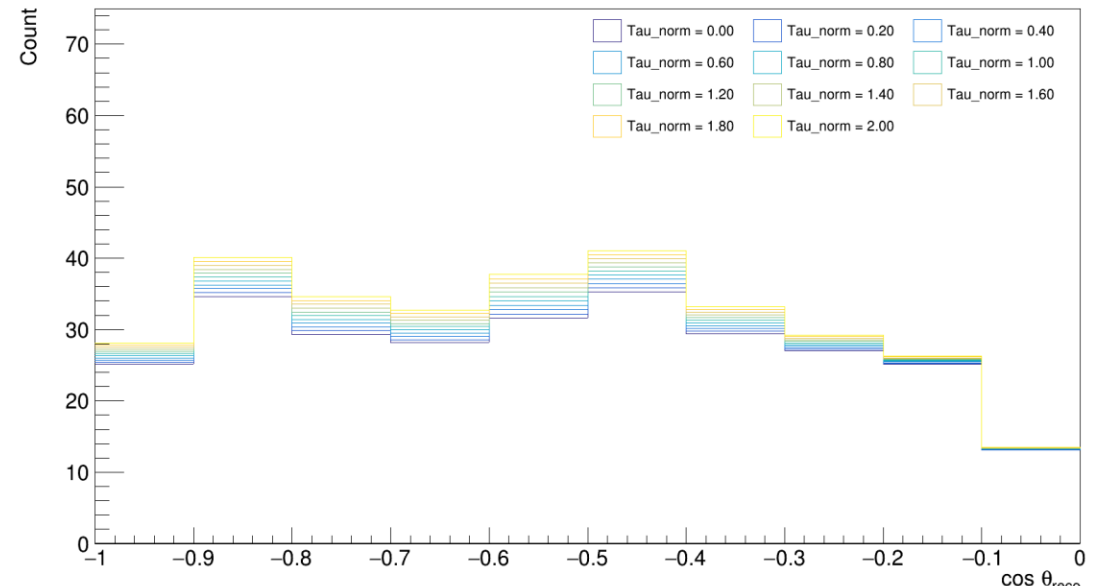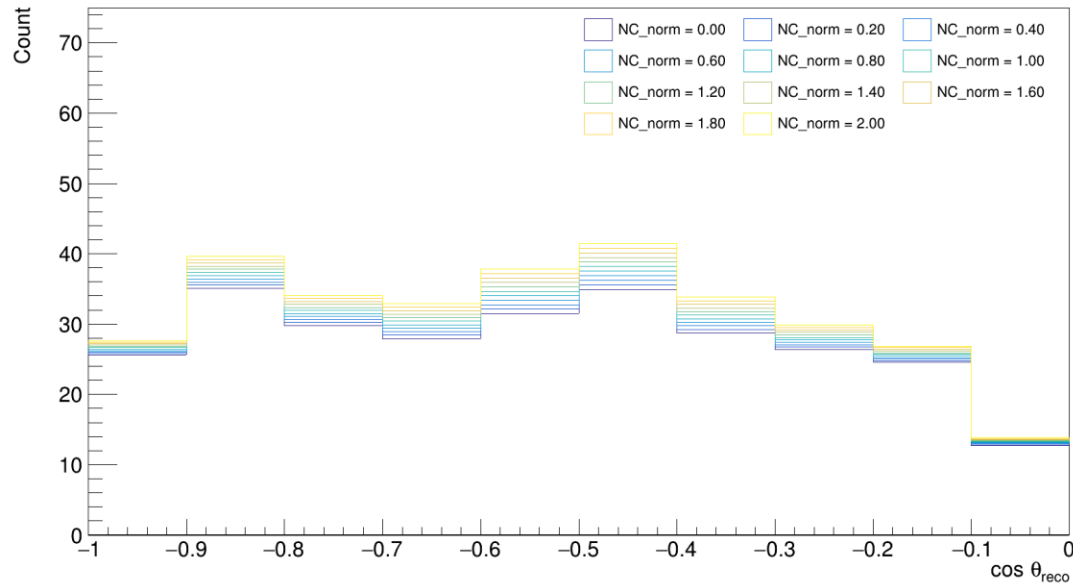
MONA effective mass [nu-mu]
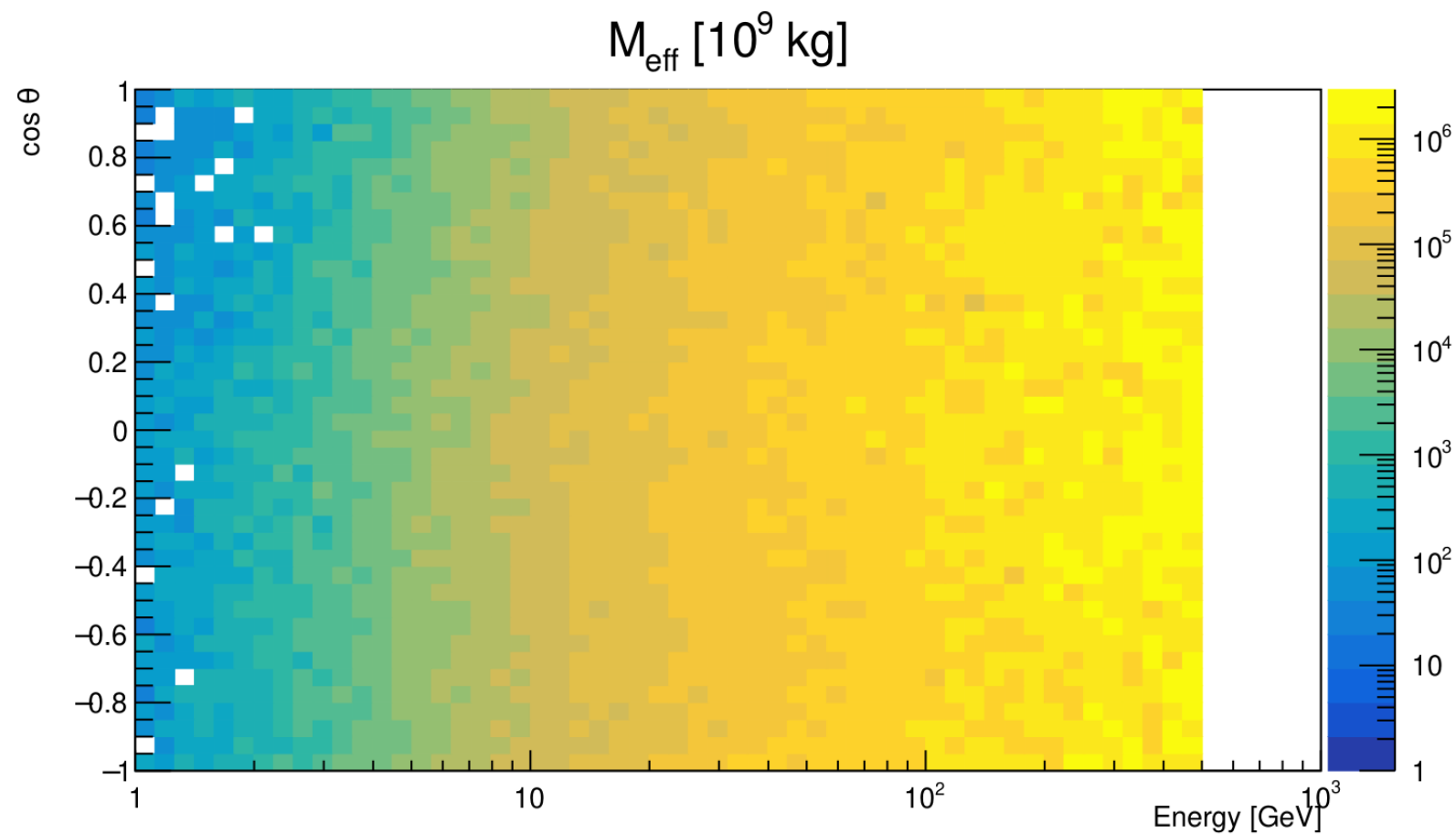
MONA true events [nu-mu]

True event count

MONA expectation value [nu-mu]

True event count

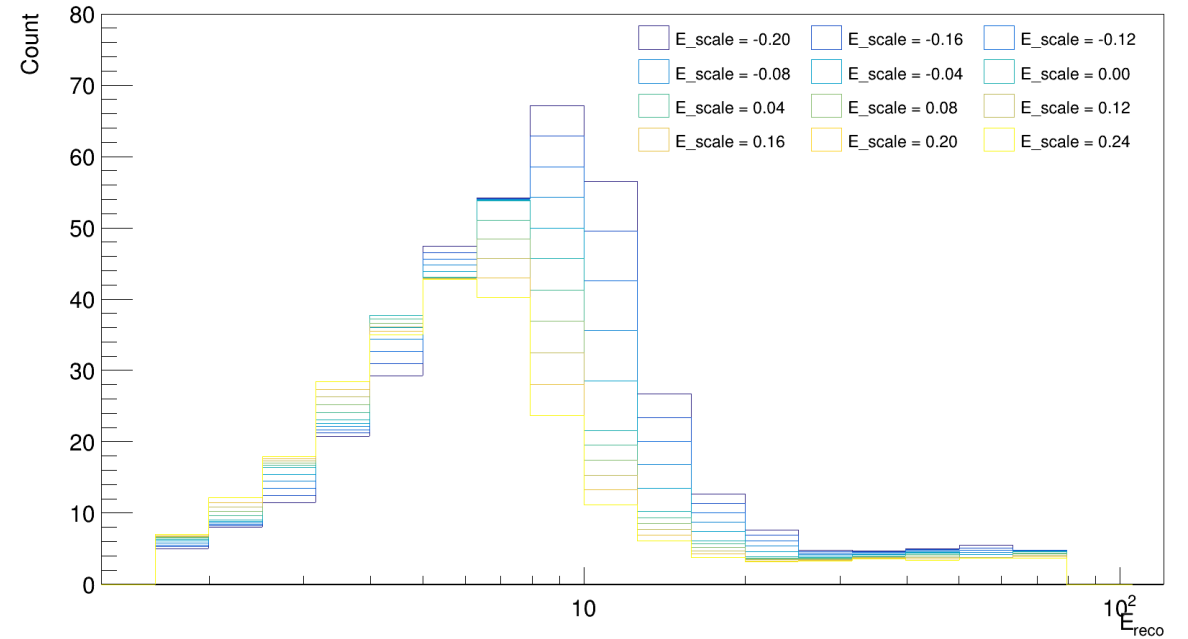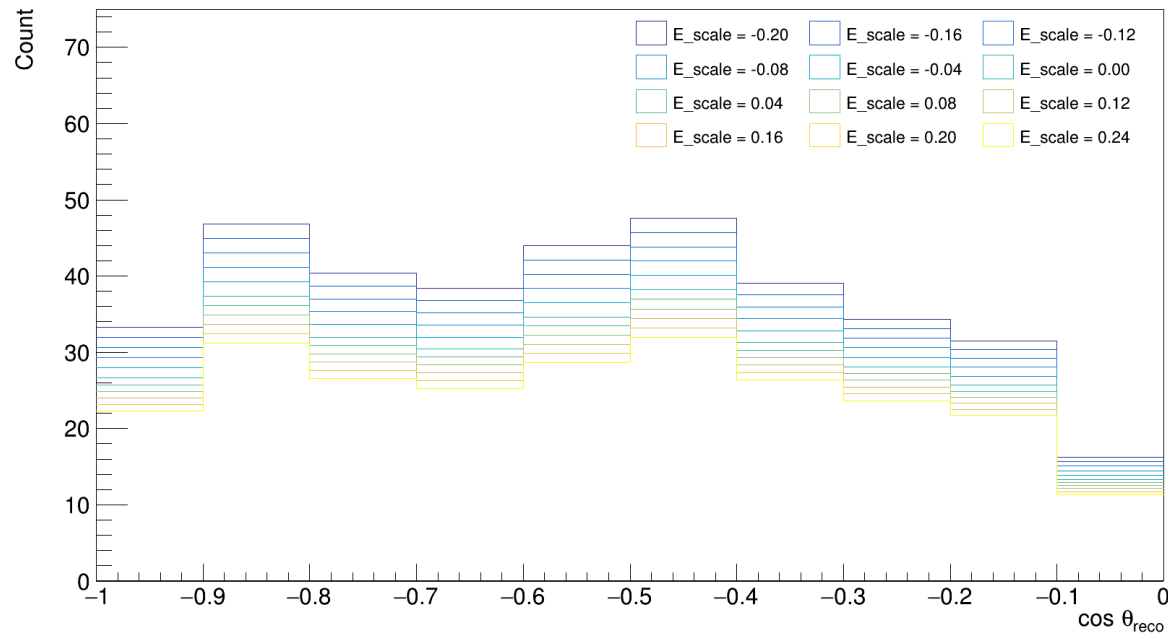# cross section systematics

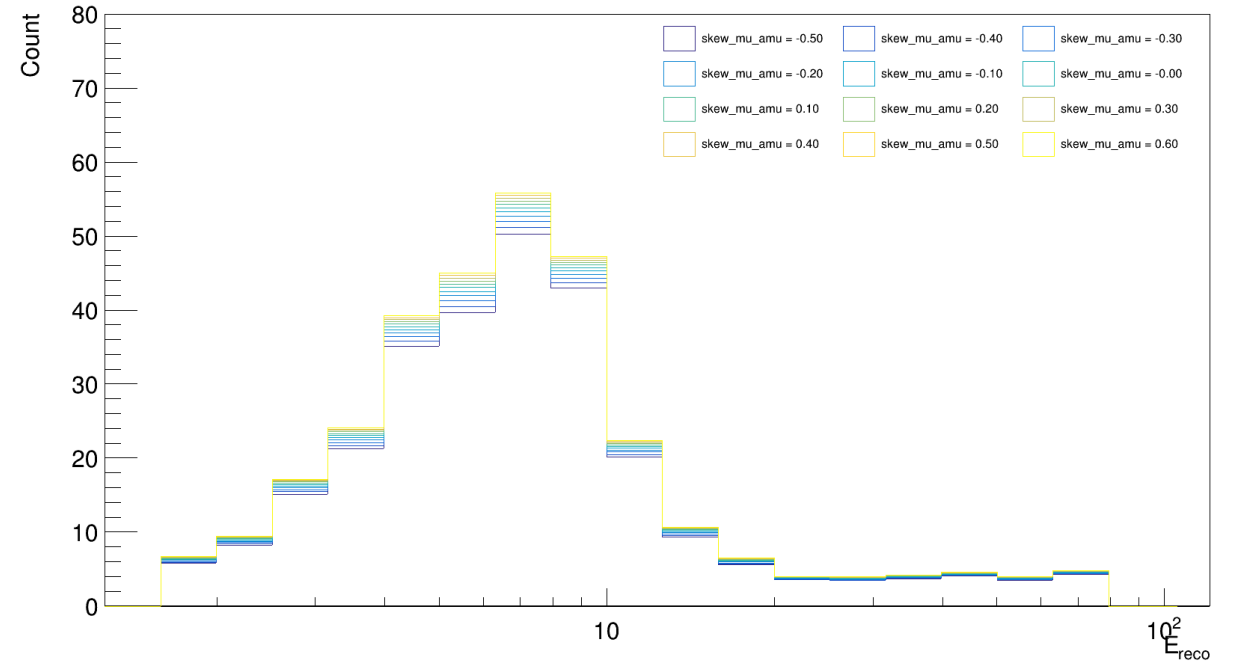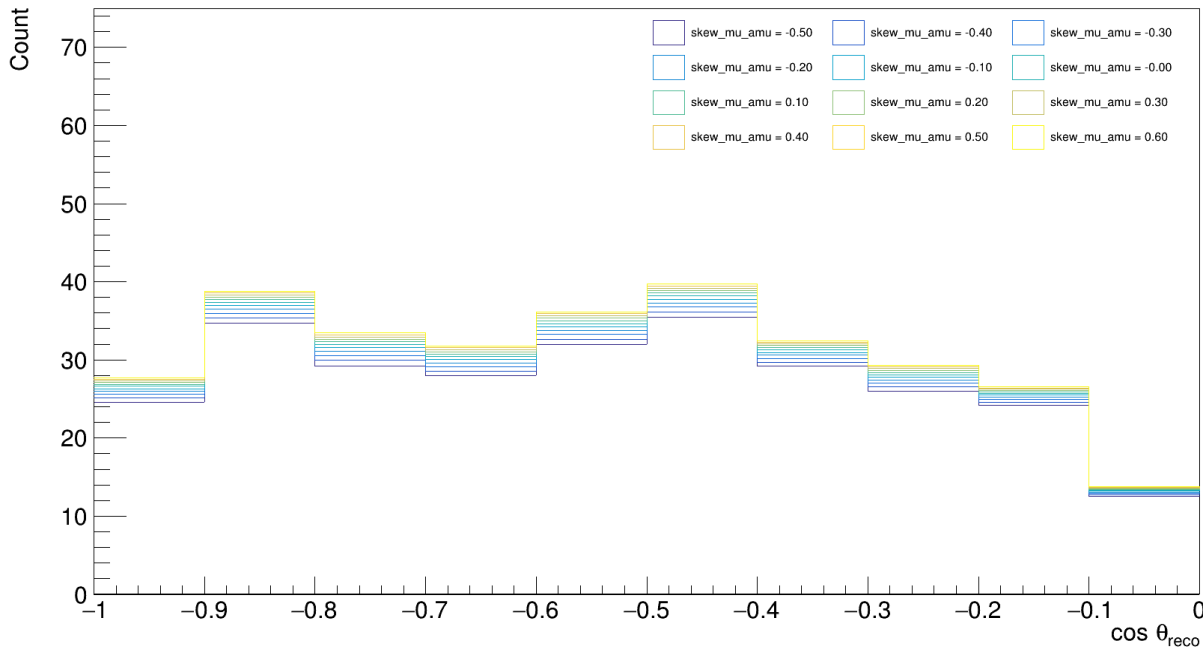Scales cross section with factor *X_norm*

Detector systematic: energy reconstruction

Scales reco energy with factor *E_scale*

Flux systematics: mu/amu skew

e/mu and e/ae skew behave
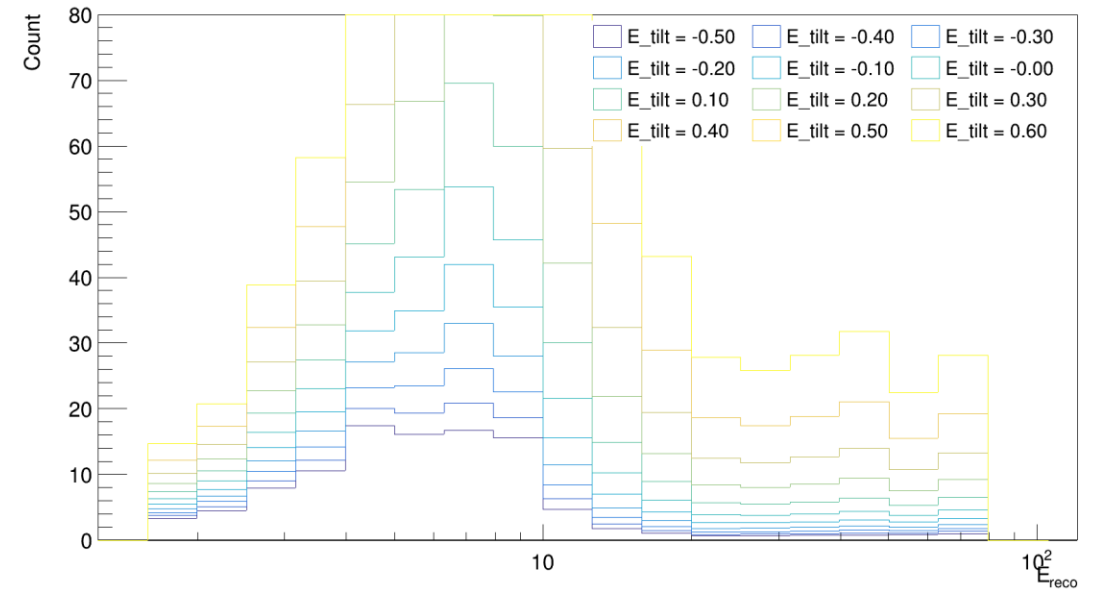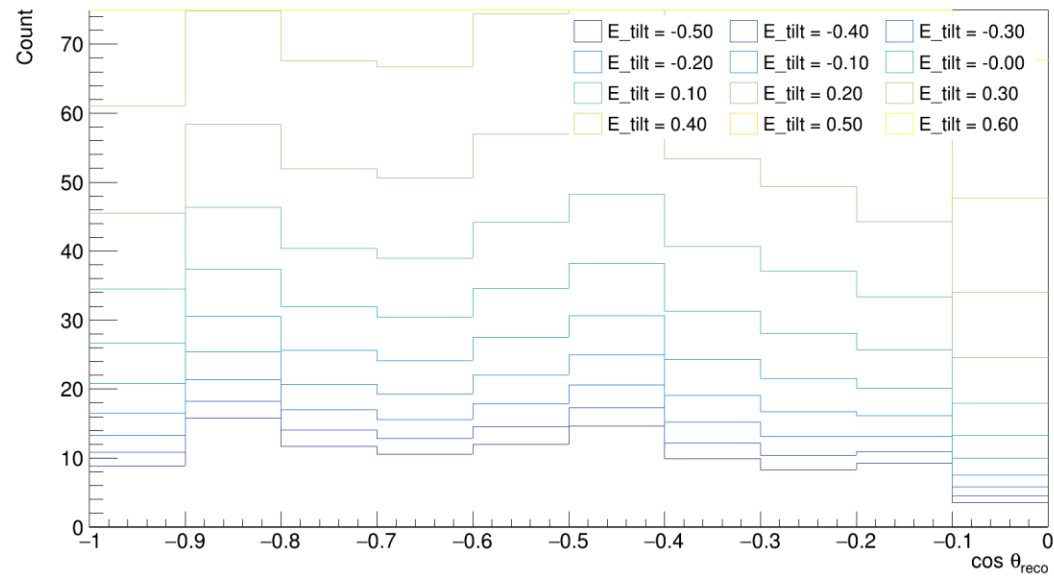similarly, but show smaller amplitude

$$\phi'_\mu = \frac{(\phi_\mu + \phi_{\bar\mu})\phi_\mu(1 + S_{\mu\bar\mu})}{\phi_\mu(1 + S_{\mu\bar\mu}) + \phi_{\bar\mu}}$$

$$\phi'_{\bar\mu} = \frac{(\phi_\mu + \phi_{\bar\mu})\phi_{\bar\mu}}{\phi_\mu(1 + S_{\mu\bar\mu}) + \phi_{\bar\mu}}$$

$$\phi'_\mu + \phi'_{\bar\mu} = \phi_\mu + \phi_{\bar\mu}$$

Flux systematics: E_tilt behavior

E_tilt changes the spectral index