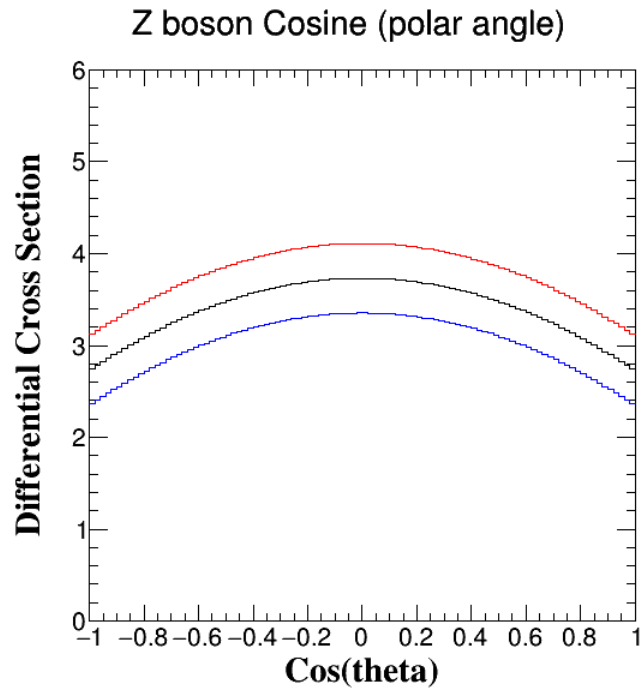


Updates of HZZ EFT study

Ryuta

11/14/2019

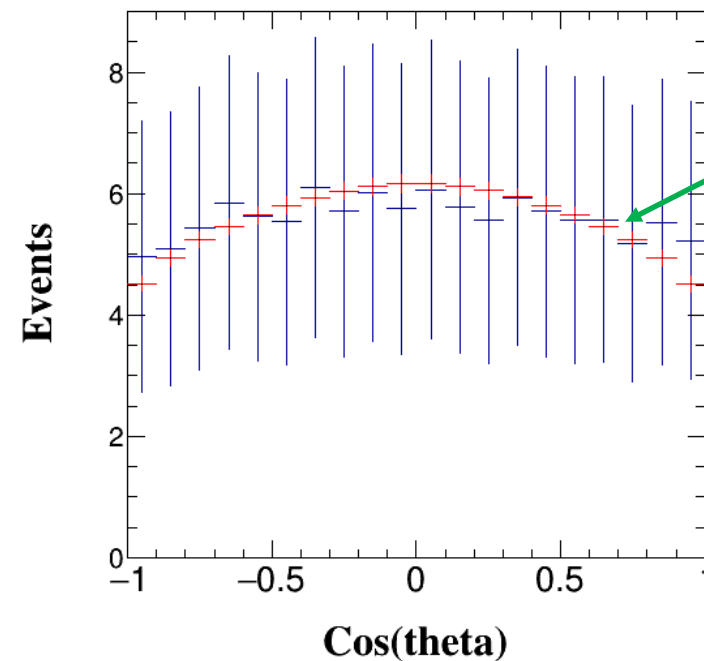
Trial of the fitting between data & model



Try to fit the model with a CEPC data



$\mu\mu$ HZZ channel (@ pre-selection)



Sorry of this coloring.

Blue is the CPEC data

Red is a model with SM

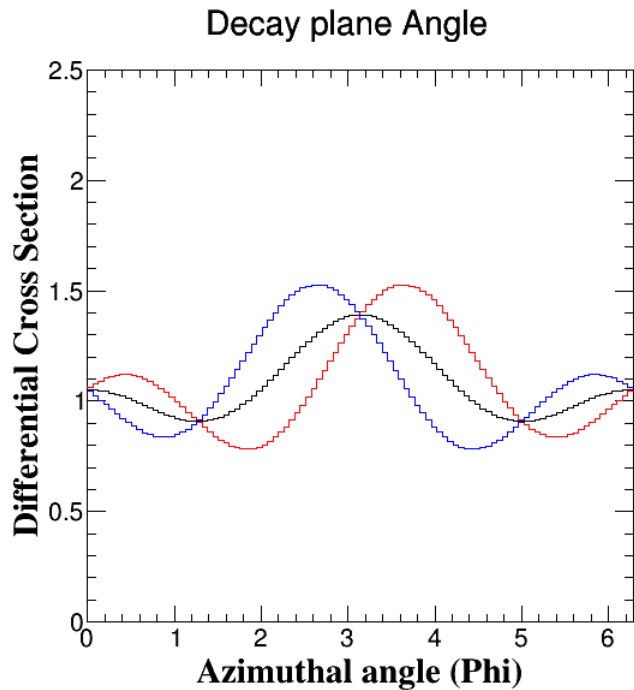
From last slide

Since the error is big (due to its statistics), the obtained χ^2 is really small. Error is calculated from root square, and poisson may be better. Now just trying to fit the other angles and then make a χ^2 plot (in 2D ?)

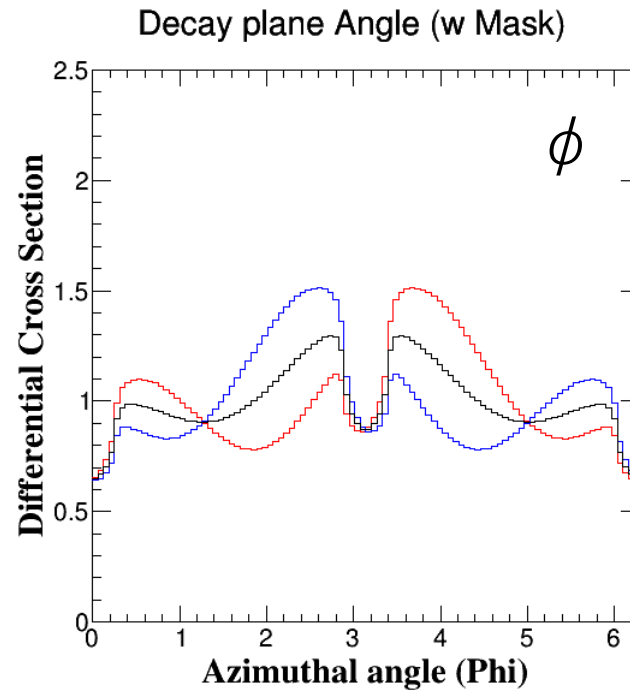
Comparison: diff. of plane angle

$$\Delta\mathcal{L}_6^{hZ\bar{f}f} \supset \delta\hat{g}_{ZZ}^h \frac{2m_Z^2}{v} h \frac{Z^\mu Z_\mu}{2} + \sum_f g_{Zf}^h \frac{h}{v} Z_\mu \bar{f} \gamma^\mu f$$

$$+ \kappa_{ZZ} \frac{h}{2v} Z^{\mu\nu} Z_{\mu\nu} + \tilde{\kappa}_{ZZ} \frac{h}{2v} Z^{\mu\nu} \tilde{Z}_{\mu\nu}.$$



acceptance correction

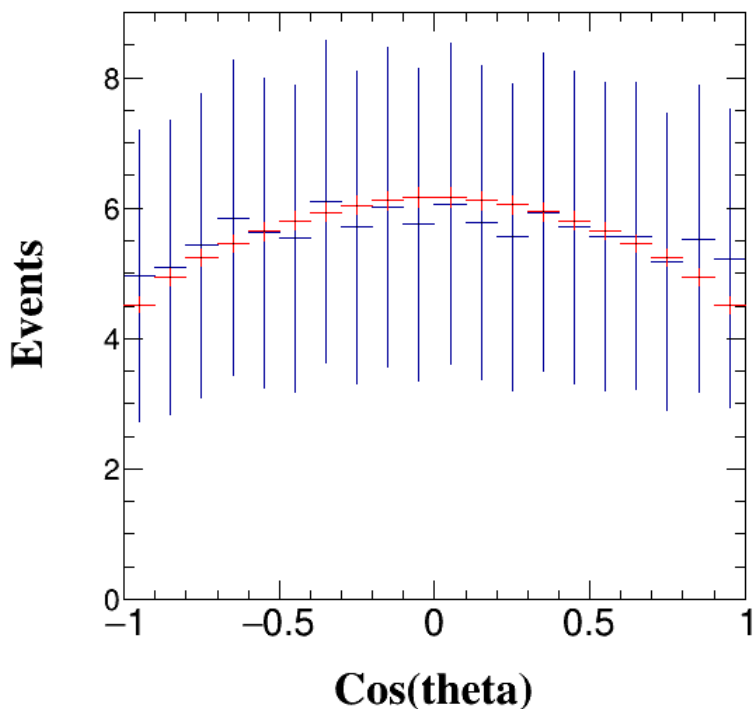


- : SM
 $(\delta\hat{g}_{ZZ}^h, g_{Zf}^h, \kappa_{ZZ}, \tilde{\kappa}_{ZZ}) = (0, 0, 0, 0)$
- : BSM
 $(\delta\hat{g}_{ZZ}^h, g_{Zf}^h, \kappa_{ZZ}, \tilde{\kappa}_{ZZ}) = (0, 0, 0, +0.2)$
- : BSM
 $(\delta\hat{g}_{ZZ}^h, g_{Zf}^h, \kappa_{ZZ}, \tilde{\kappa}_{ZZ}) = (0, 0, 0, -0.2)$

Try to fit the result

Analysis channel for CEPC data: $\mu\mu HZZ$

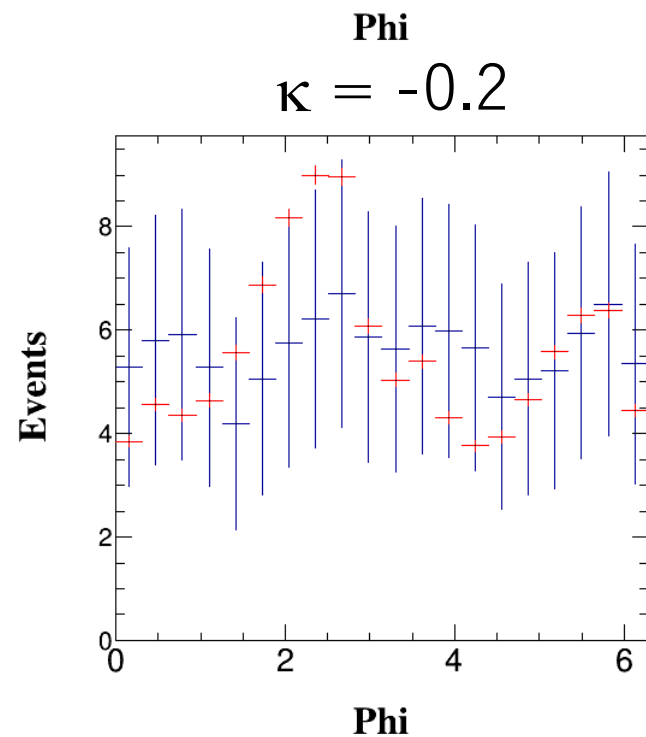
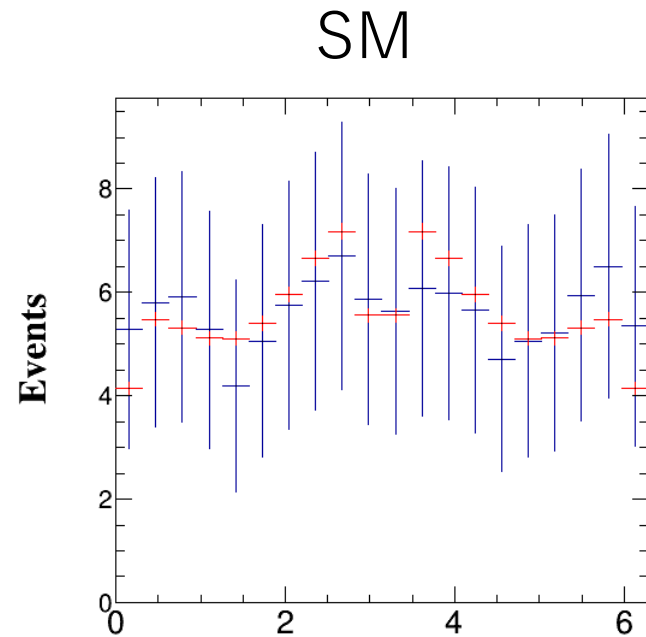
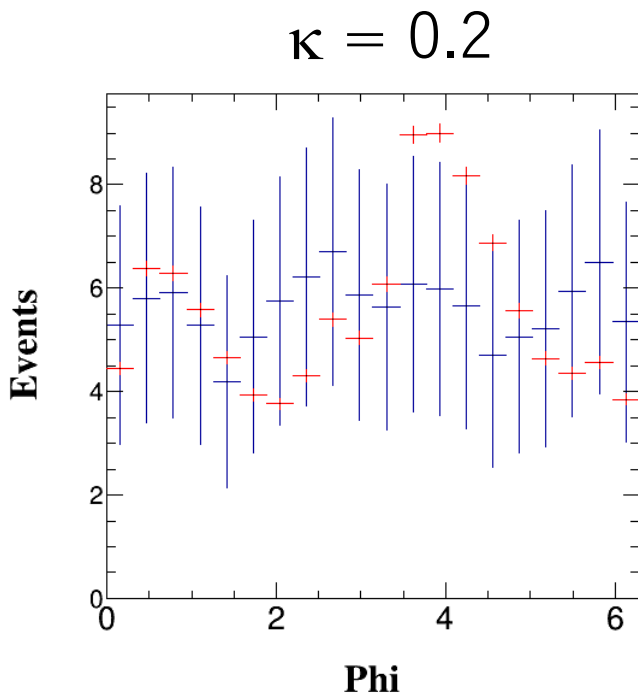
Fit the model(SM)



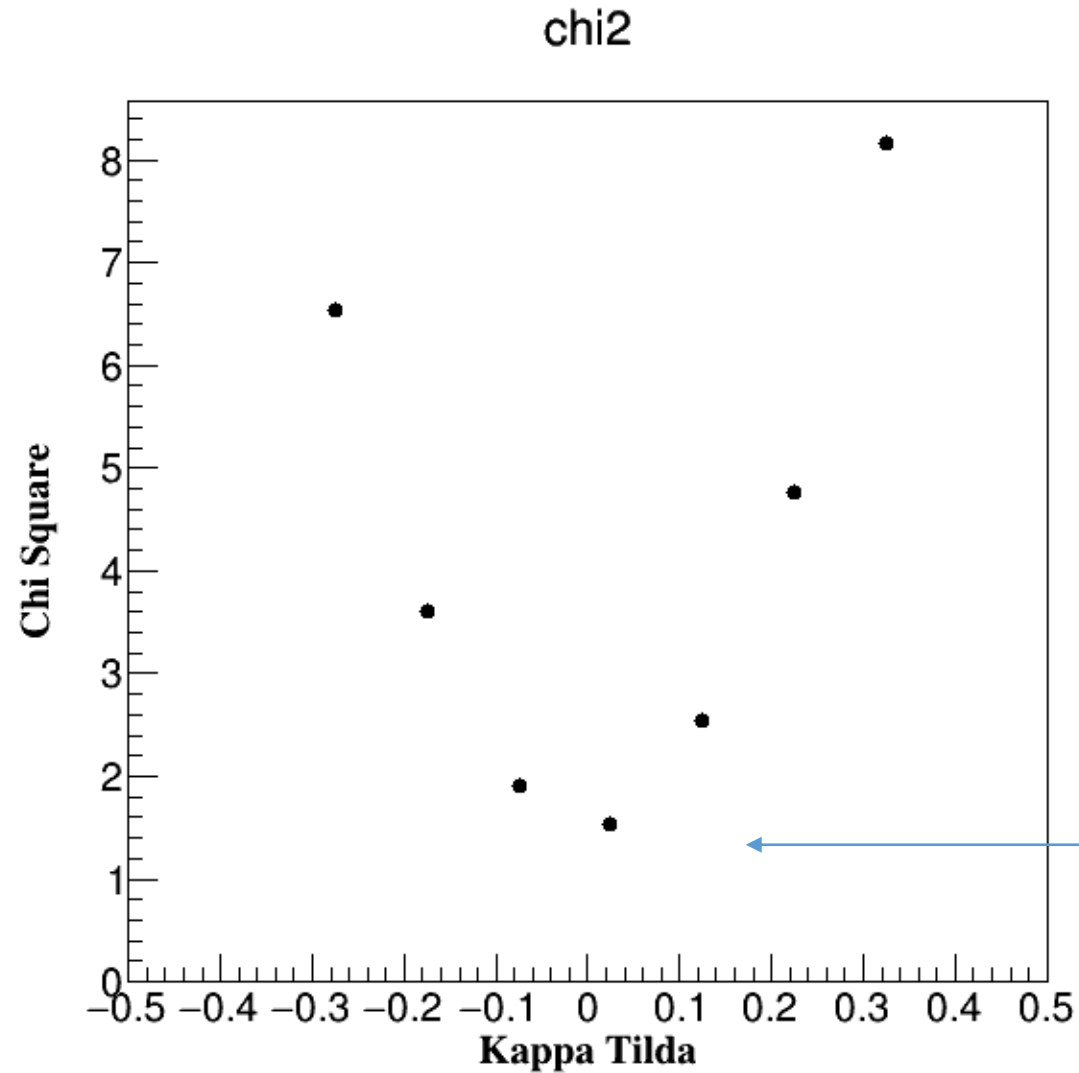
Red : model

Black : CEPC data analysis

Using this normalization factor, try to see the "chi2"



Chi2 with kappa-tilda



slight shift is just a matter of filling into histogram (it should be at 0 for SM)