# Status of $\gamma\gamma$->HH analysis

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# tabulate helicity amplitude

gamgamZZ code calculates $\gamma\gamma$->ZZ helicity amplitude for each Z helicity.

- input to gamgamZZ code : photon helicity, $\theta$, $\beta_z$

$\beta_z(n) = \beta_{zi} + \delta\beta_z \times n$ $\quad$ $\theta_i$ = 8deg, $\delta\theta$ = 1.68deg

$\theta(m) = \theta_i + \delta\theta \times m$ $\quad$ $\beta_{zi}$ = 0.01, $\delta\beta_z$ = 0.005

$\rightarrow$make helicity amplitude table FT[n][m]

I regarded FT[n][m] as linear function between n+1 and n (m+1 and m), and complement amplitude between n+1 and n (m+1 and m).

# difference between table and code

for example...

amplitude(from table) = (0.017287143, 0.055309150i)
Abs(amplitude) = 0.057947799

amplitude(from gamgamZZ) = (0.017291404, 0.055314400i)
Abs(amplitude) = 0.057954081

difference = $-0.6282\times10^{-5}$

→This difference does not influence Xsec.

# problem in program

helicity amplitude calculation needs $\theta$ and $\beta_z$.

$\theta$ is calculated on Z-boson's 4-momentum,
but sometimes it is not exist in program.

## next plan...

- program debug
- include ZZ->ffff