Analysis Update

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Rotated mass fitting coarse bins (0.1 or 0.2 deg, silicon. w/o tran.)
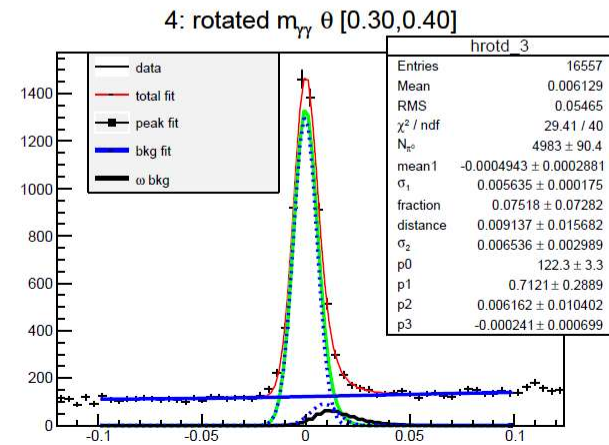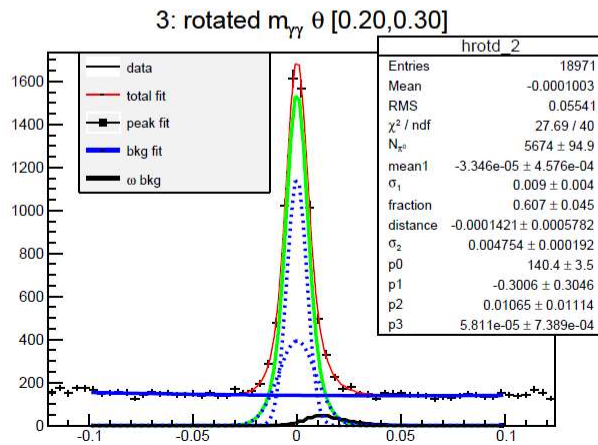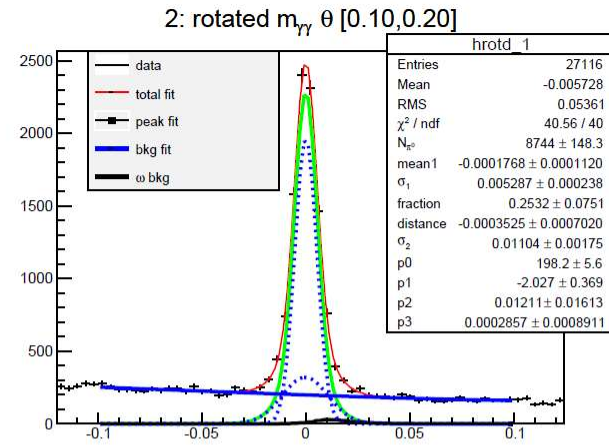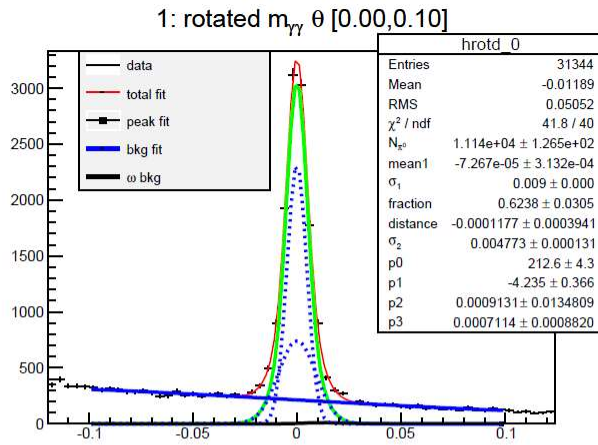
Rotated mass fitting final bins (0.02 deg, silicon, w/o tran.)

1: rotated $m_{\gamma\gamma}$ θ [0.00,0.02]

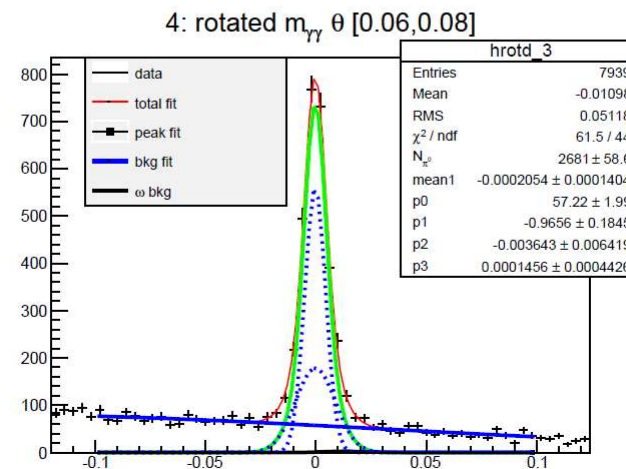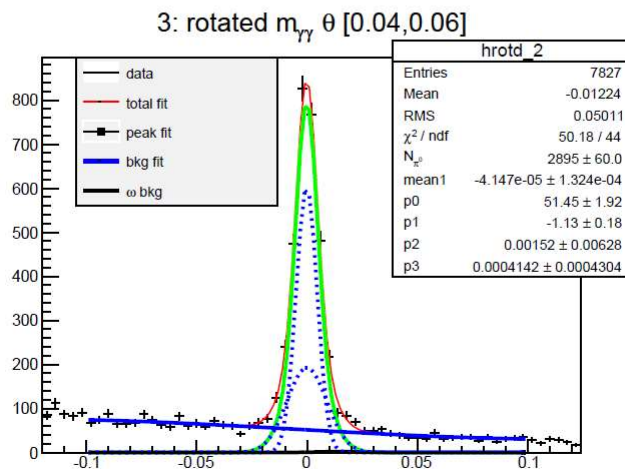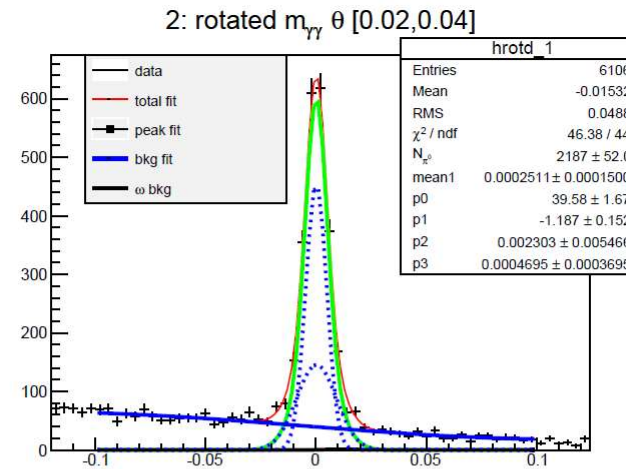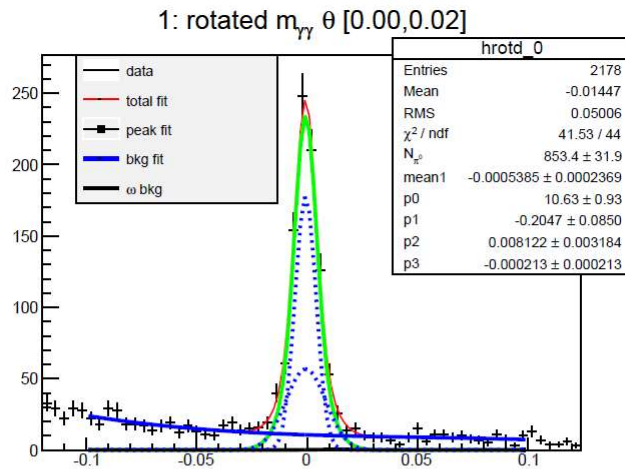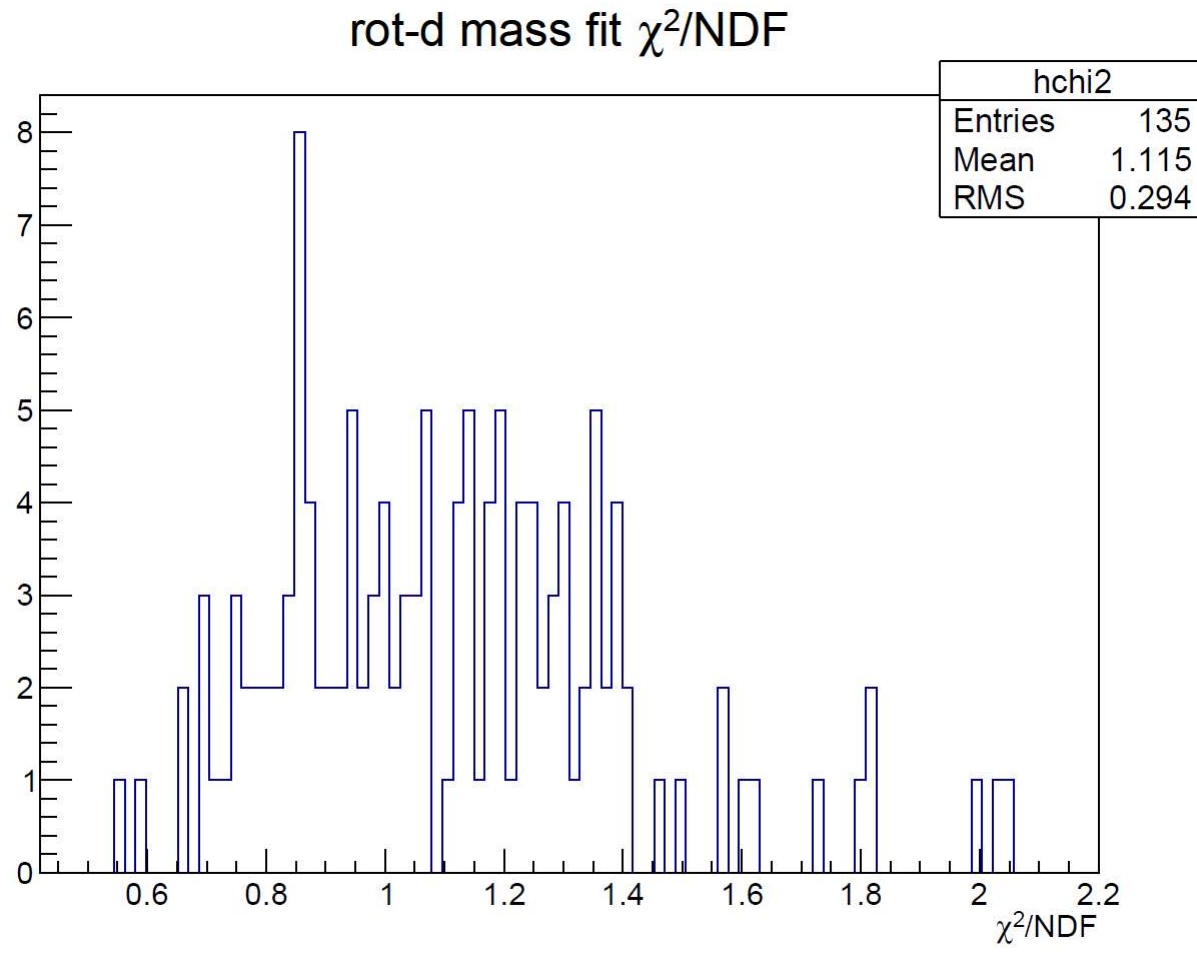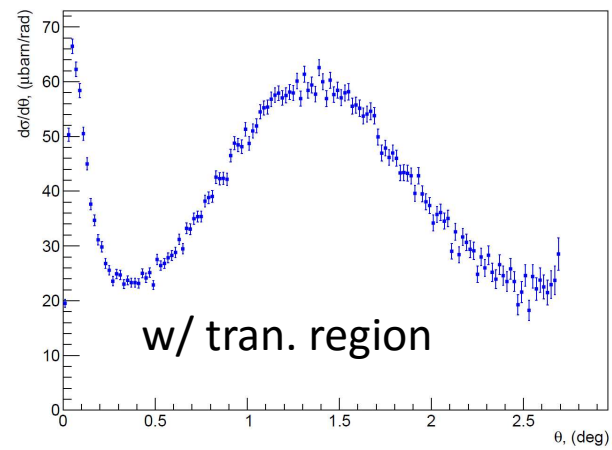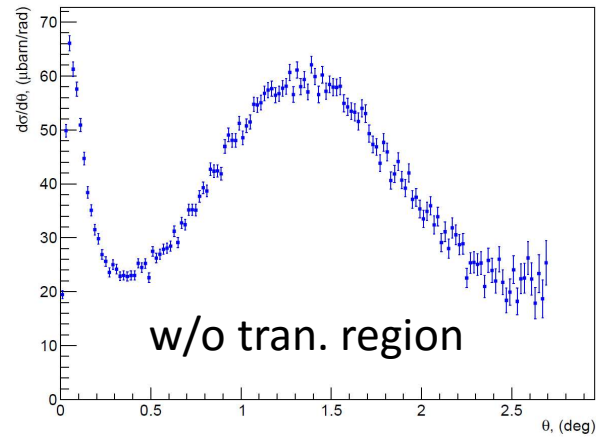| hrotd_0	
Entries	2178
Mean	-0.01447
RMS	0.05006
χ^2 / ndf	41.53 / 44
N_{π^0}	853.4 ± 31.9
mean1	-0.0005385 ± 0.0002369
p0	10.63 ± 0.93
p1	-0.2047 ± 0.0850
p2	0.008122 ± 0.003184
p3	-0.000213 ± 0.000213

2: rotated $m_{\gamma\gamma}$ θ [0.02,0.04]

hrotd_1	
Entries	6106
Mean	-0.01532
RMS	0.0488
χ^2 / ndf	46.38 / 44
N_{π^0}	2187 ± 52.0
mean1	0.0002511 ± 0.0001500
p0	39.58 ± 1.67
p1	-1.187 ± 0.152
p2	0.002303 ± 0.005466
p3	0.0004695 ± 0.0003695

3: rotated $m_{\gamma\gamma}$ θ [0.04,0.06]

hrotd_2	
Entries	7827
Mean	-0.01224
RMS	0.05011
χ^2 / ndf	50.18 / 44
N_{π^0}	2895 ± 60.0
mean1	-4.147e-05 ± 1.324e-04
p0	51.45 ± 1.92
p1	-1.13 ± 0.18
p2	0.00152 ± 0.00628
p3	0.0004142 ± 0.0004304

4: rotated $m_{\gamma\gamma}$ θ [0.06,0.08]

hrotd_3	
Entries	7939
Mean	-0.01098
RMS	0.05118
χ^2 / ndf	61.5 / 44
N_{π^0}	2681 ± 58.6
mean1	-0.0002054 ± 0.0001404
p0	57.22 ± 1.99
p1	-0.9656 ± 0.1845
p2	-0.003643 ± 0.006419
p3	0.0001456 ± 0.0004426

Legend (all panels): data, total fit, peak fit, bkg fit, ω bkg

Fitting chi^2/NDF distribution

rot-d mass fit χ^2/NDF

hchi2	
Entries	135
Mean	1.115
RMS	0.294

χ^2/NDF

Yields and cross sections

π⁰ silicon yield rotated $m_{\gamma\gamma}$ method

w/o tran. region

π⁰ silicon yield rotated $m_{\gamma\gamma}$ method

w/ tran. region

cross section Yang

w/o tran. region

w/ tran. region
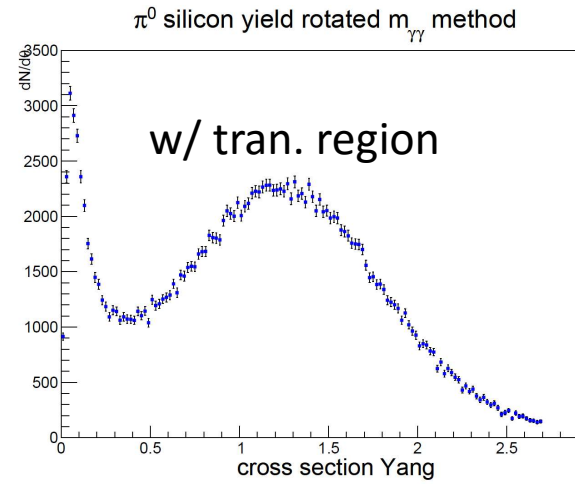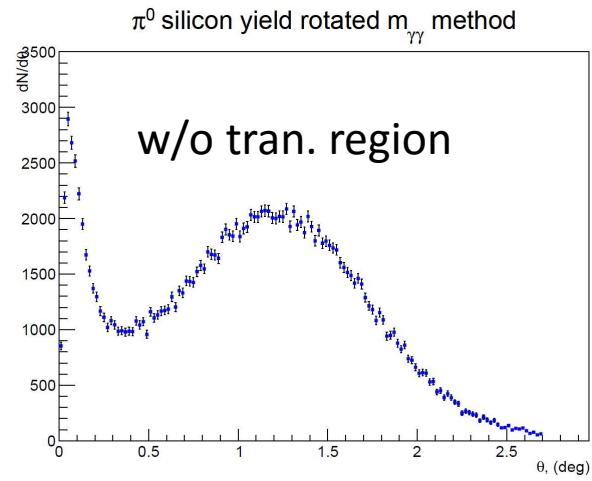
Compare to Lingling/Ilya's cross section

Decay width fitting

π^0 yield (Si, crystal w/o tran.)

χ^2 / ndf	202.5 / 121
Γ	7.876 ± 0.067
C1	0.9247 ± 0.0075
ϕ	0.8637 ± 0.0249
C2	0.4559 ± 0.0194

π^0 yield (Si, crystal w/ tran.)

χ^2 / ndf	199.5 / 121
Γ	7.882 ± 0.065
C1	0.9196 ± 0.0070
ϕ	0.8495 ± 0.0242
C2	0.511 ± 0.016
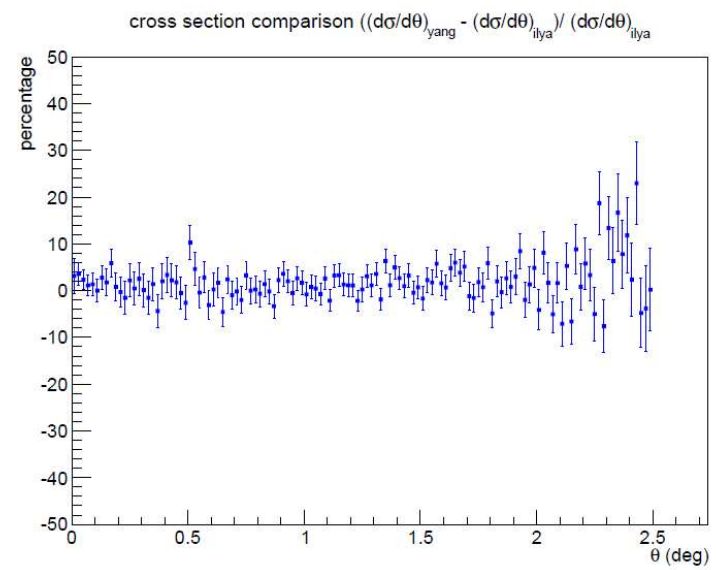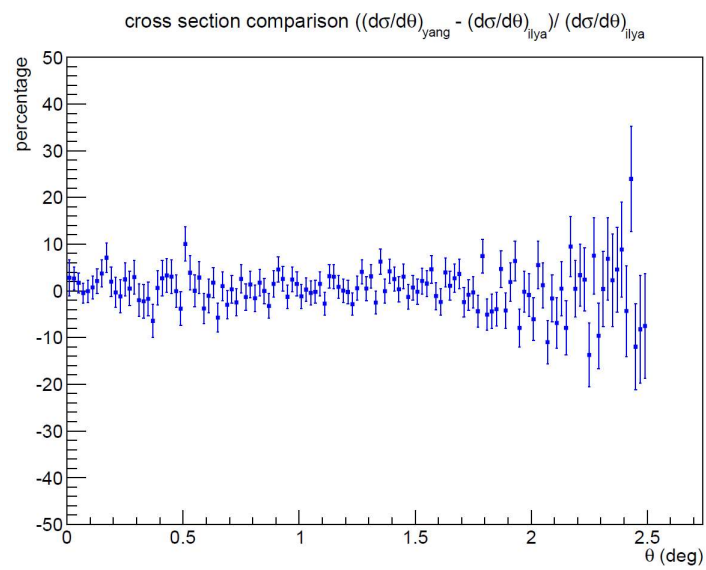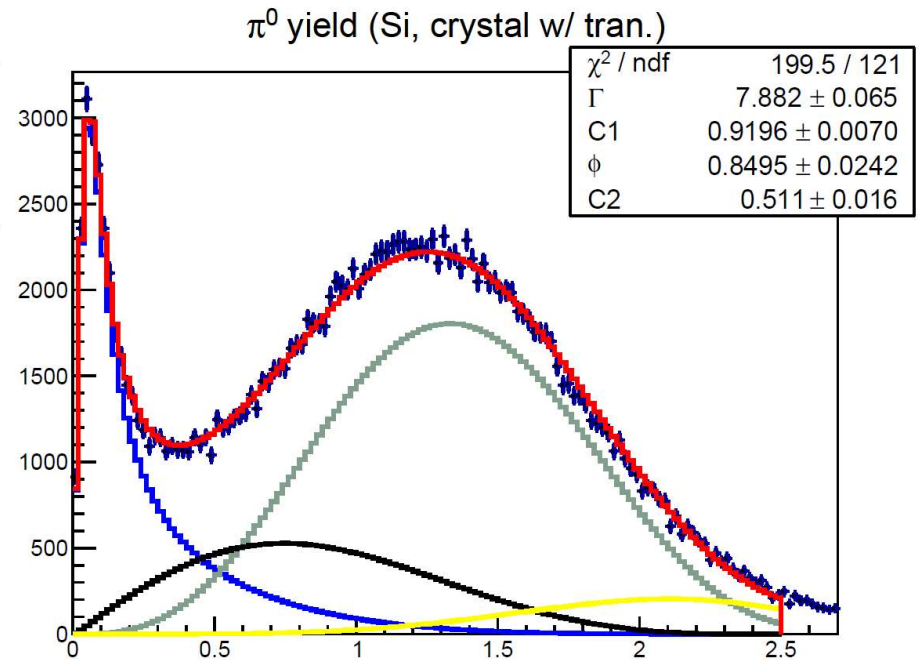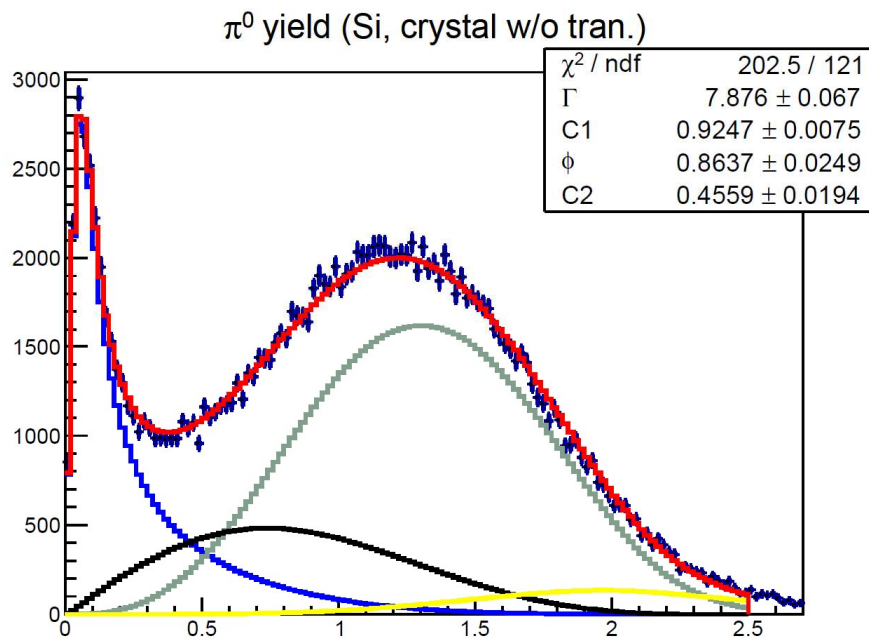
Summary

- ## Previous using M.C. shape to fit signal

Silicon	Γ eV	C1	φ	C2	χ^2/NDF
w/o tran.(need correction)	7.883±0.067	0.925±0.008	0.857±0.025	0.462±0.020	1.617
w/ tran.(need correction)	7.947±0.065	0.924±0.007	0.852±0.024	0.516±0.016	1.617
Acc sub. w/o tran.	7.918±0.067	0.934±0.007	0.850±0.025	0.438±0.018	1.590
Acc sub. w/ tran.	7.989±0.065	0.926±0.007	0.848±0.024	0.519±0.016	1.635

- Double Gaussian fitting

w/o tran. (needcorrection)	7.876±0.067	0.925±0.008	0.864±0.025	0.456±0.019	1.674
w/ tran. (need correction)	7.882±0.065	0.920±0.007	0.850±0.024	0.511±0.016	1.649