1 Follow-up on angular distribution parameters for $J_{Z\gamma} = 0$ simple case

Angular distribution in a simple case of $J_{Z\gamma} = 0$:

$\frac{d\sigma}{d\Omega_Z d\Omega_l} = a\cos^2\theta + b\cos\theta + c$

where:

$a = T_1^2[(\frac{1}{2}A_{\frac{1}{2},-\frac{1}{2},1})^2 + (\frac{1}{2}A_{-\frac{1}{2},\frac{1}{2},1})^2 - (A_{-\frac{1}{2},-\frac{1}{2},1} + A_{\frac{1}{2},\frac{1}{2},1})^2] + T_2^2[(\frac{1}{2}A_{\frac{1}{2},-\frac{1}{2},-1})^2 + (\frac{1}{2}A_{-\frac{1}{2},\frac{1}{2},-1})^2 - (A_{-\frac{1}{2},-\frac{1}{2},-1} + A_{\frac{1}{2},\frac{1}{2},-1})^2]$

$b = \frac{1}{2}[T_1^2[(A_{-\frac{1}{2},\frac{1}{2},1})^2 + (A_{\frac{1}{2},-\frac{1}{2},1})^2] + T_2^2[(A_{-\frac{1}{2},\frac{1}{2},-1})^2 + (A_{\frac{1}{2},-\frac{1}{2},-1})^2]]$

$c = T_1^2[(\frac{1}{2}A_{\frac{1}{2},-\frac{1}{2},1})^2 + (\frac{1}{2}A_{-\frac{1}{2},\frac{1}{2},1})^2 + (A_{-\frac{1}{2},-\frac{1}{2},1} + A_{\frac{1}{2},\frac{1}{2},1})^2] + T_2^2[(\frac{1}{2}A_{\frac{1}{2},-\frac{1}{2},-1})^2 + (\frac{1}{2}A_{-\frac{1}{2},\frac{1}{2},-1})^2 + (A_{-\frac{1}{2},-\frac{1}{2},-1} + A_{\frac{1}{2},\frac{1}{2},-1})^2]$

$and:$

$T_1 = \sum_{\lambda_q\lambda_{\bar{q}}}^{\lambda_q-\lambda_{\bar{q}}=0} T^0_{\lambda_q,\lambda_{\bar{q}},1,1}$

$T_2 = \sum_{\lambda_q\lambda_{\bar{q}}}^{\lambda_q-\lambda_{\bar{q}}=0} T^0_{\lambda_q,\lambda_{\bar{q}},-1,-1}$

From $\cos\theta_Z$ distribution (not shown today) we see that $J_{Z\gamma} = 0$ is not a case, but it just was a first simple step to consider. Next step is to look at $J_{Z\gamma} = 1$ for both $fitFunc(\theta_Z, \theta_l, \phi_Z - \phi_l)$ and result of analytical calculation fits. I am working on incorporating of efficiencies and acceptances to get meaningful results.

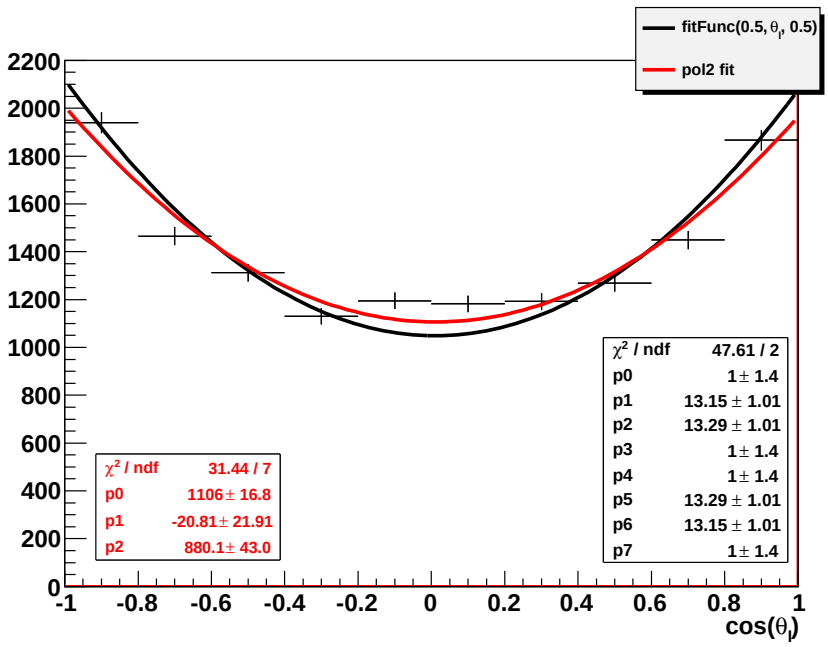
fitFunc(0.5, θl, 0.5)
pol2 fit
2200
2000
1800
1600
1400
1200
1000
800
600
400
200
0
-1
-0.8
-0.6
-0.4
-0.2
0
0.2
0.4
0.6
0.8
1
cos(θl)
χ2 / ndf 31.44 / 7
p0 1106 ± 16.8
p1 -20.81 ± 21.91
p2 880.1 ± 43.0
χ2 / ndf 47.61 / 2
p0 1 ± 1.4
p1 13.15 ± 1.01
p2 13.29 ± 1.01
p3 1 ± 1.4
p4 1 ± 1.4
p5 13.29 ± 1.01
p6 13.15 ± 1.01
p7 1 ± 1.4

Figure 1: