Status Report on CP Violating TGC Coupling

29 June 1998

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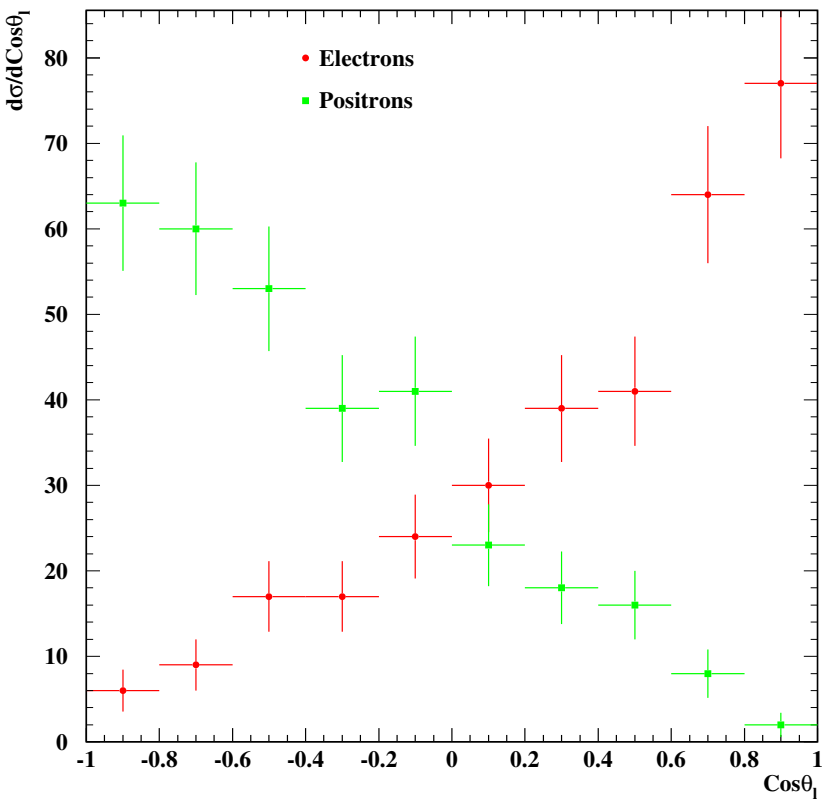
Contents

- Progress with ERATO

ERATO

I finally started to get some sense out of ERATO. Thanks to Anna Macchiolo. Aparently you have to unweight the events before you can use them.

This is the polar angle of the electrons/positrons (SM). It used to be flat.



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ERATO

TGC Parameters That Can Be Changed In ERATO

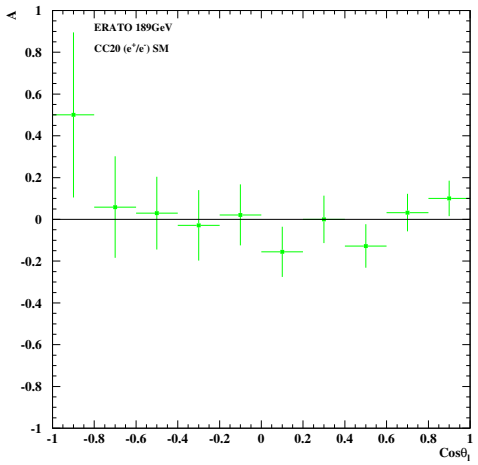
ICASE	Operator	Non-Vanishing Deviations
0	$O_{B\phi}$	x_γ, x_z
1	$O_{W\phi} - O_{B\phi}$	δ_Z
2	$O_{W\phi}$	x_γ, δ_Z, x_z
3	O_W	$\lambda_\gamma, \lambda_Z$
4	$O'_{W\phi}$	x_γ, x_Z
5	O'_W	$\lambda_\gamma, \lambda_Z$
6	Anapole Term	z_{an}
7	κ_γ	κ_γ
8	λ_γ	λ_γ
9	g_z^4	g_z^4
10	$\tilde{\kappa}_Z$	$\tilde{\kappa}_Z, \tilde{\kappa}_\gamma$
11	$\tilde{\lambda}_Z$	$\tilde{\lambda}_Z, \tilde{\lambda}_\gamma$

I'm interested in $\tilde{\kappa}_\gamma$, $\tilde{\kappa}_Z$, $\tilde{\lambda}_Z$ and $\tilde{\lambda}_\gamma$.

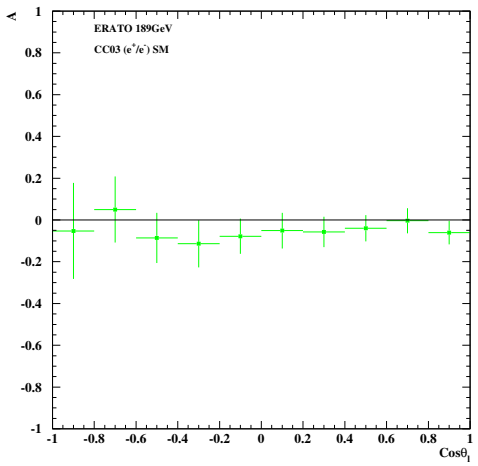
Asymmetries

First looking at the SM ERATO MC:

CC20



CC03

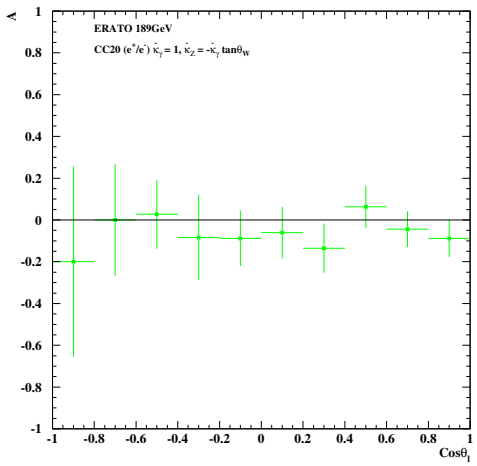


Looks flat as expected.

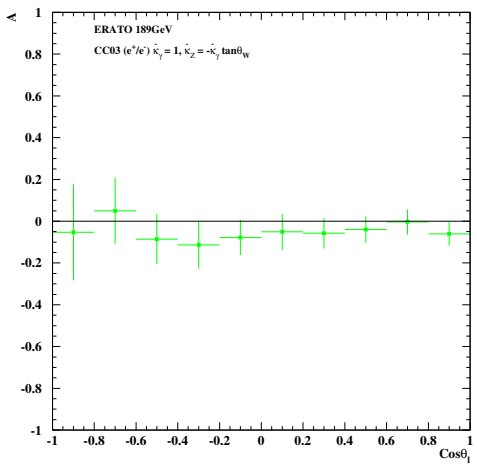
Asymmetries

$\tilde{\kappa}_\gamma = 1$ and $\tilde{\kappa}_Z = -\tilde{\kappa}_\gamma tan^2\theta_W$ ERATO MC:

CC20



CC03

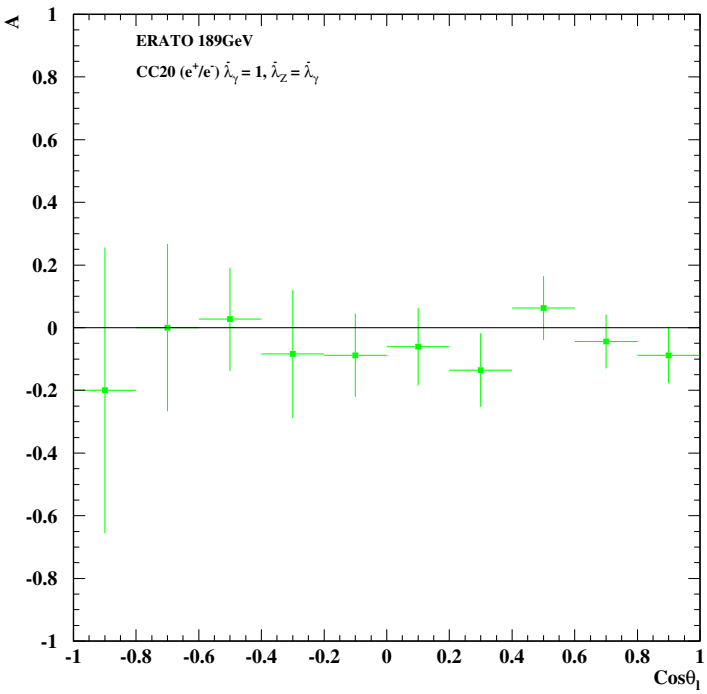


THESE SHOULD NOT BE FLAT!!!!!!

Asymmetries

$\tilde{\lambda}_\gamma = 1$ and $\tilde{\lambda}_Z = -\tilde{\lambda}_\gamma$ ERATO MC:

CC20



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Summary

- ERATO “seems” to be working.
- But it doesn’t introduce an aysmmetry in the lepton polar angle as expected, when the CP violating parameter is turned on????????????
- I’ll have to check if the couplings different people talk about are what I think they are (Of course no-body uses the same definitions).
- I should also check out the W production angle to see if this agrees with Anna’s plots.