Error Analysis Meeting

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KaonLT Experiment, Jefferson Lab Hall C

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Overview

We have a separate value of asymmetry for each of the following data sets:

	Full fit	Approximate fit
Nominal cuts	A	A’
Narrow CT cut	CN	CN’
Wide CT cut	CW	CW’
Narrow MM cut	MN	MN’
Wide MM cut	MW	MW’

The purpose of this meeting is to finalize how to calculate

$$A \pm \delta_{stat} \pm \delta_C \pm \delta_M$$

Question 1

At what stage do we do the weighted average of full and approximate fit?

Option 1: Weighted averages first

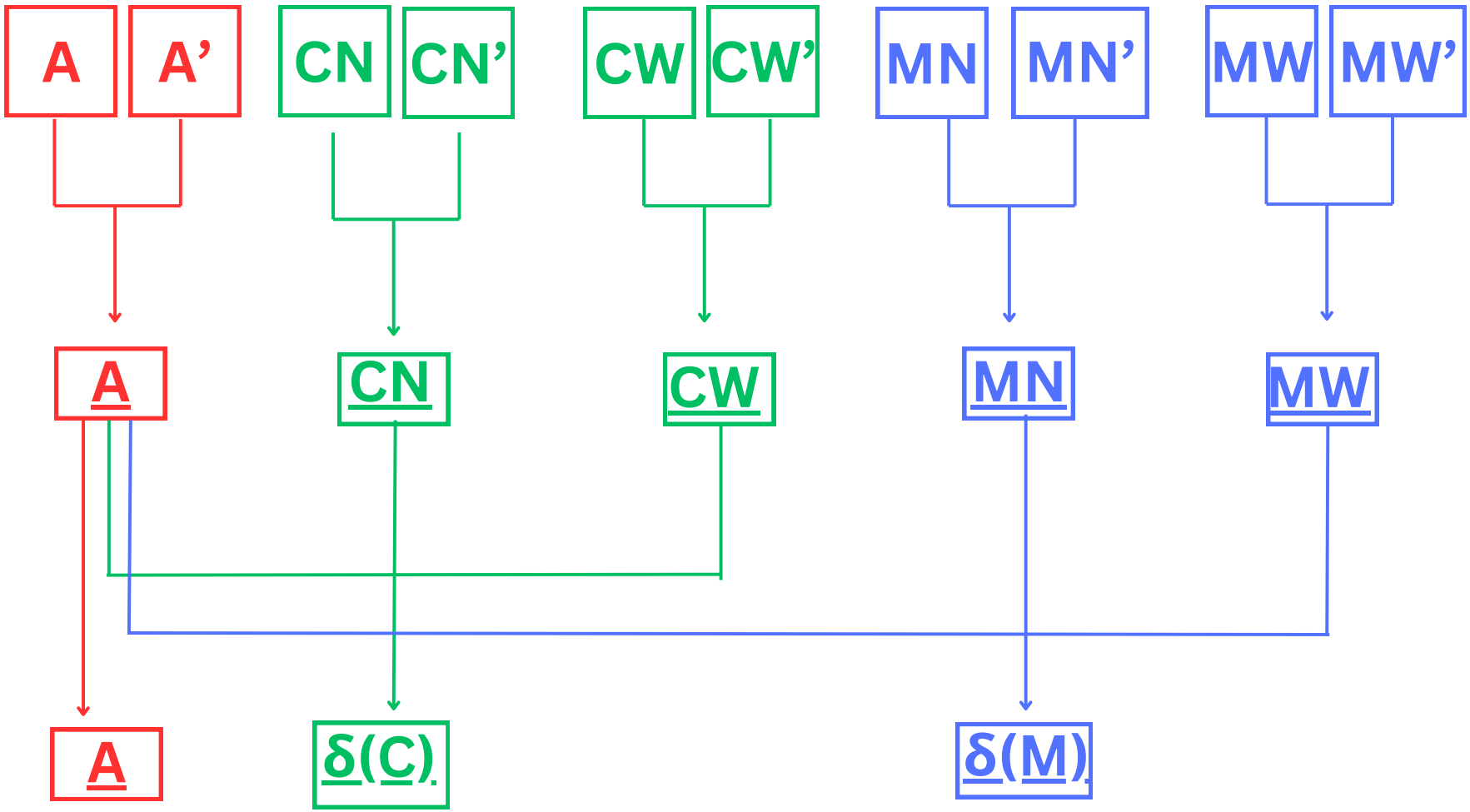
- Calculate weighted average for every set of cuts
- Use weighted averages to calculate cut dependence errors
- *This is what I am currently doing*

Option 2: Cut dependence first

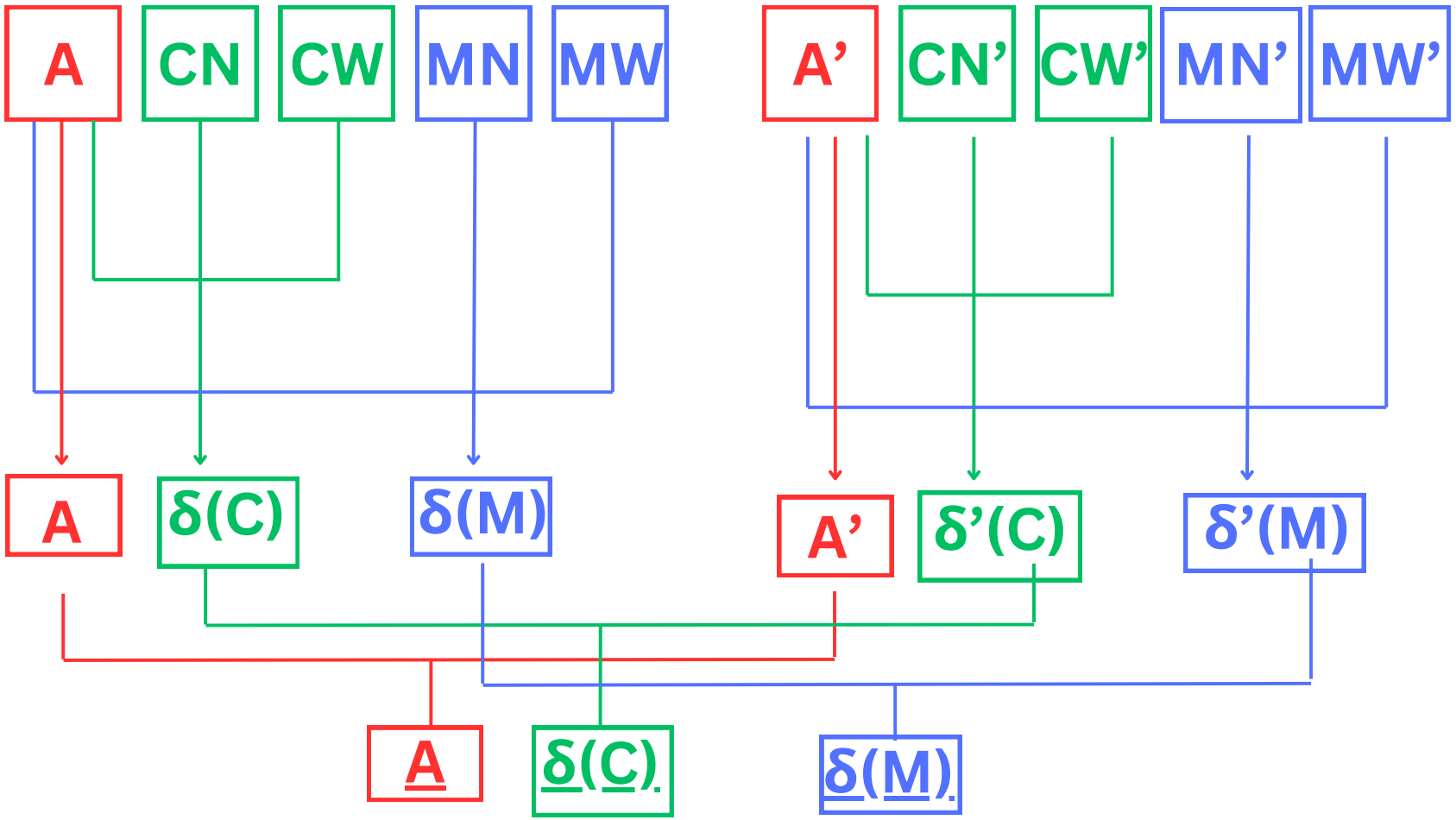
- Calculate cut dependence separately for full and approximated fits
- Then do the weighted average
- *This option leads to two more questions*

In meeting: why do weighted average? Report A and use A' as a systematic.

Weighted averages first



Cut dependence first



Question 2

How do we calculate the error due to the cut dependences?

I am currently calculating it as

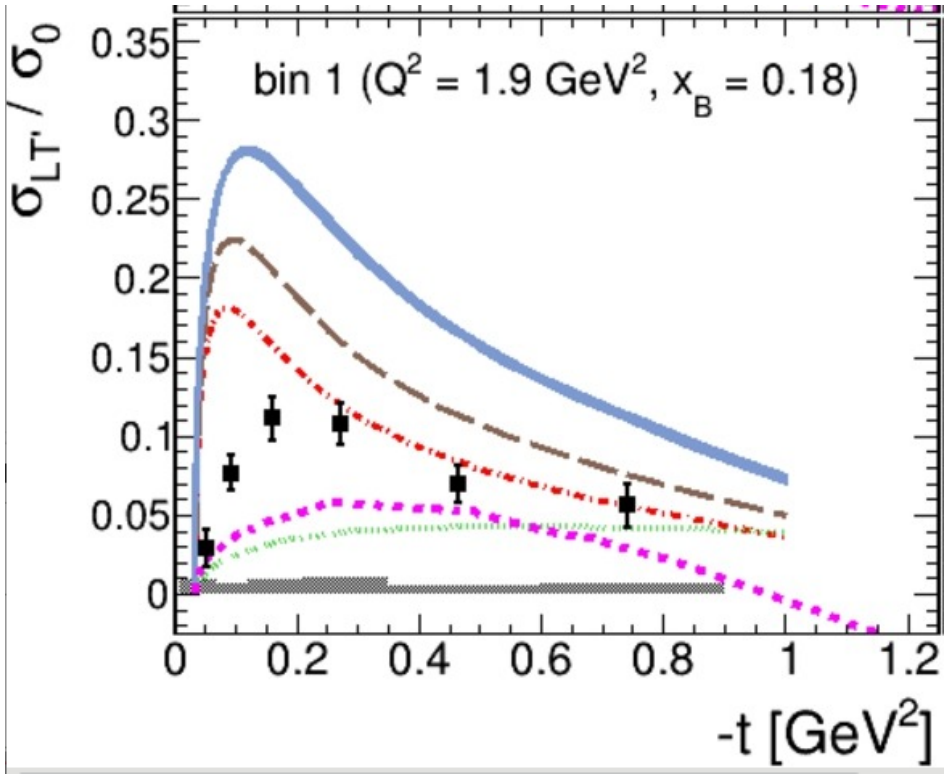
$$\delta_C = \frac{abs(A - CN) + abs(A - CW)}{2}$$

$$\delta_M = \frac{abs(A - MN) + abs(A - MW)}{2}$$

In meeting: decided to try RMS of differences between A and A', CN, CW, MN, MW.

Question 3

Should we do any sort of point-to-point vs overall uncertainty?
So far I have done systematics like S. Diehl et al:



In meeting: all systematics seem to be point-tp-point, so try the double error bar.