

Combining Datasets for Vertexing Analysis

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Introduction

For 2015 vertexing analysis, we have 6 effective datasets:

SVT at 0.5 mm and 1.5 mm; L1L1, L1L2, and L2L2 in each of those

Simple addition gives us the expected number of A's as a function of mass and ϵ

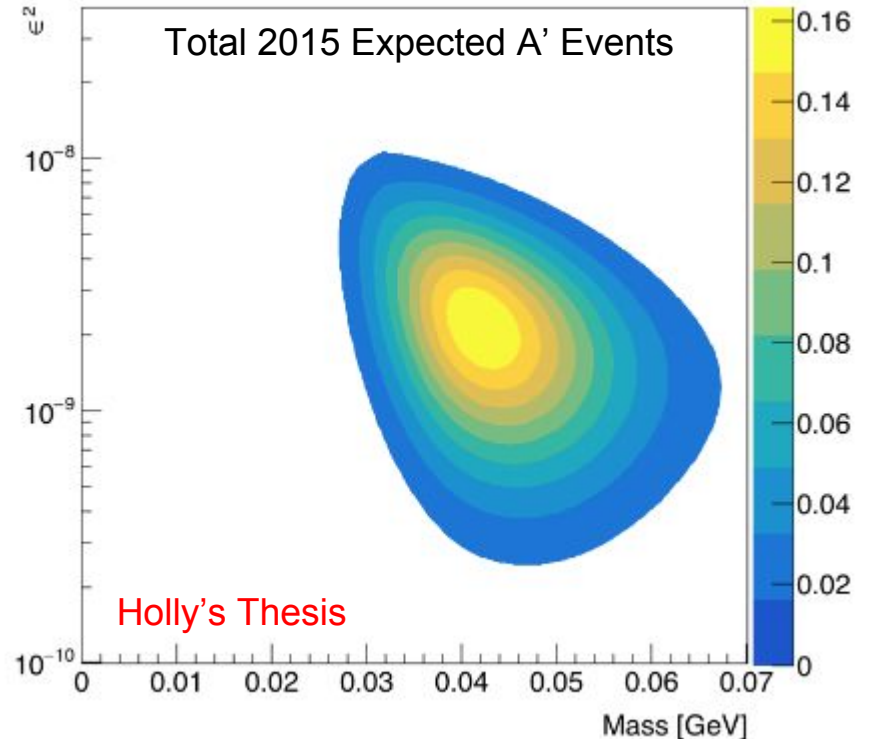
Use this to determine our reach (where we expect 2.3 events)

How much are each of these datasets for vertexing worth looking at?

Combining Datasets in tweakPass6

Dataset	Peak Number of Expected A' Events
0.5 mm; L1L1	0.109
0.5 mm; L1L2	0.04
0.5 mm; L2L2	0.05*
1.5 mm; L1L1	0.02
1.5 mm; L1L2	0.007
1.5 mm; L2L2	0.006

*Assumes removal of very high z events due to trident production at silicon



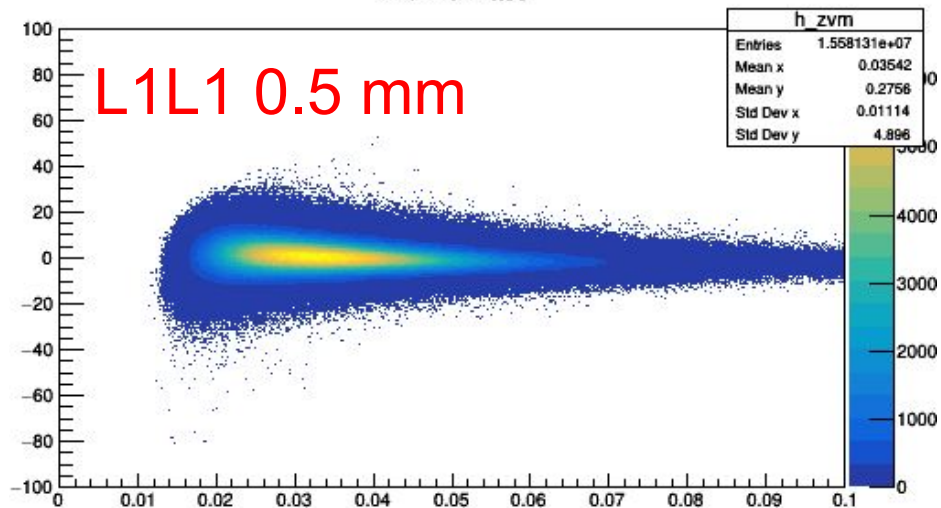
Cuts

isPair1; layer cuts; matchChi2<10;trackT - CIT <4; cIT diff<2; eleCIY*posCIY<0;
bscChisq<10; bscChisq-uncChisq<5; trkChisq<30;
abs(eleP-posP)/(eleP+posP)<0.5;eleP<ebeam*0.75; uncP<ebeam*1.15;
radiative; isolation cuts; Track Extrapolation; Kinks; Target Projection; Beamspot
Projection

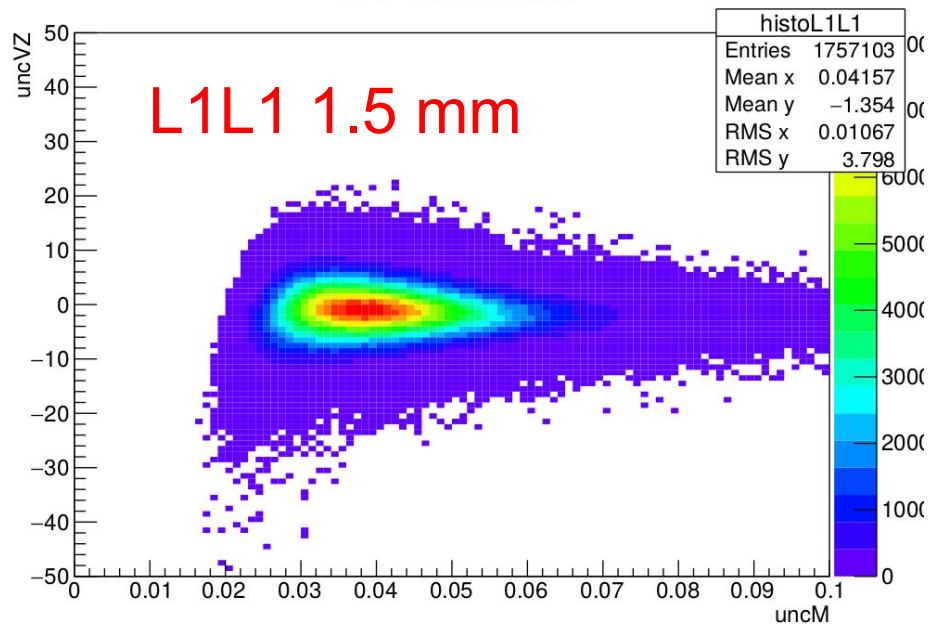
Same cuts as previous talk

L1L1 Datasets

z vtx vs mass

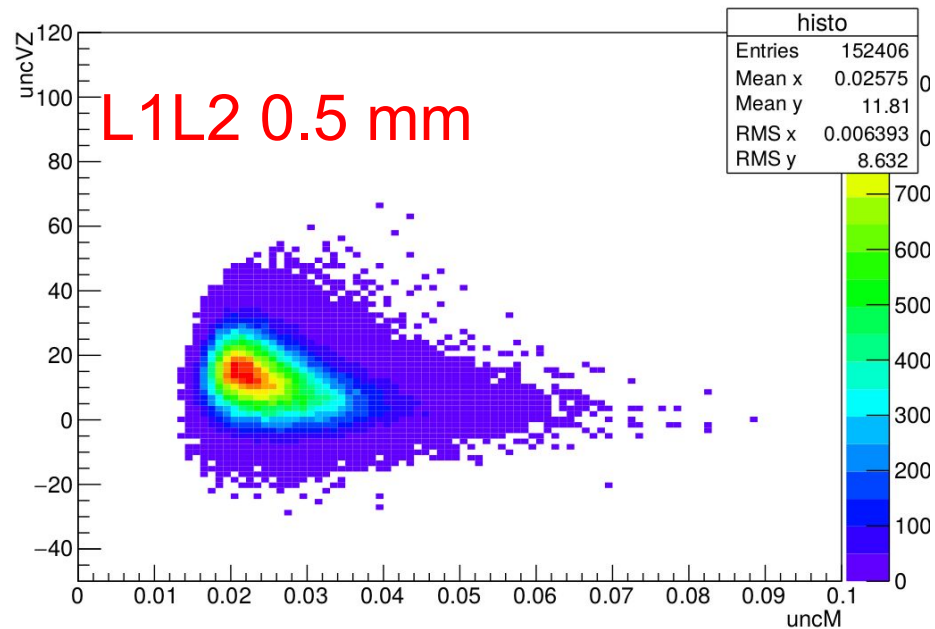


L1L1 1.5 mm Data

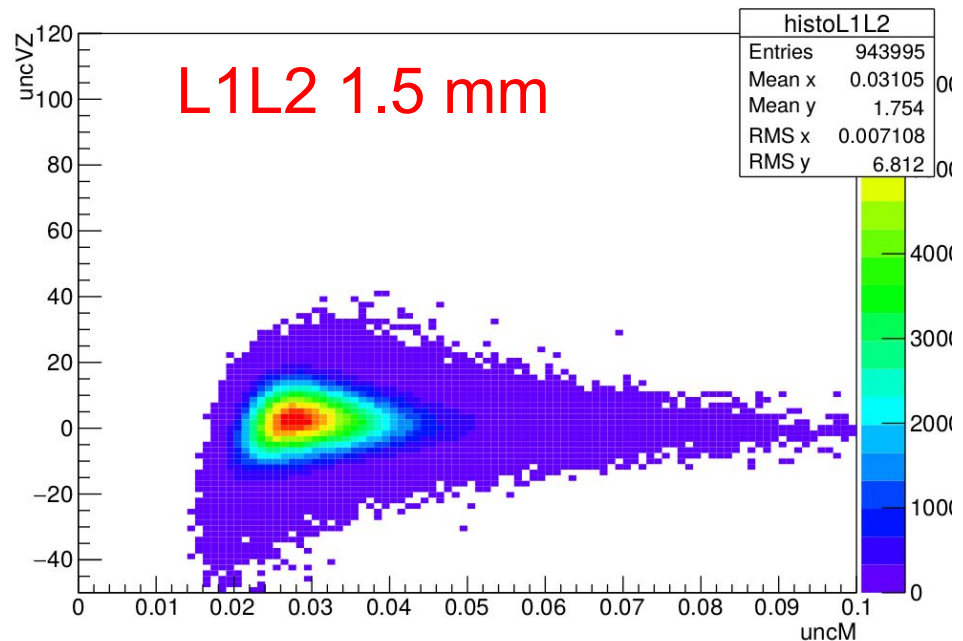


L1L2 Datasets

Data

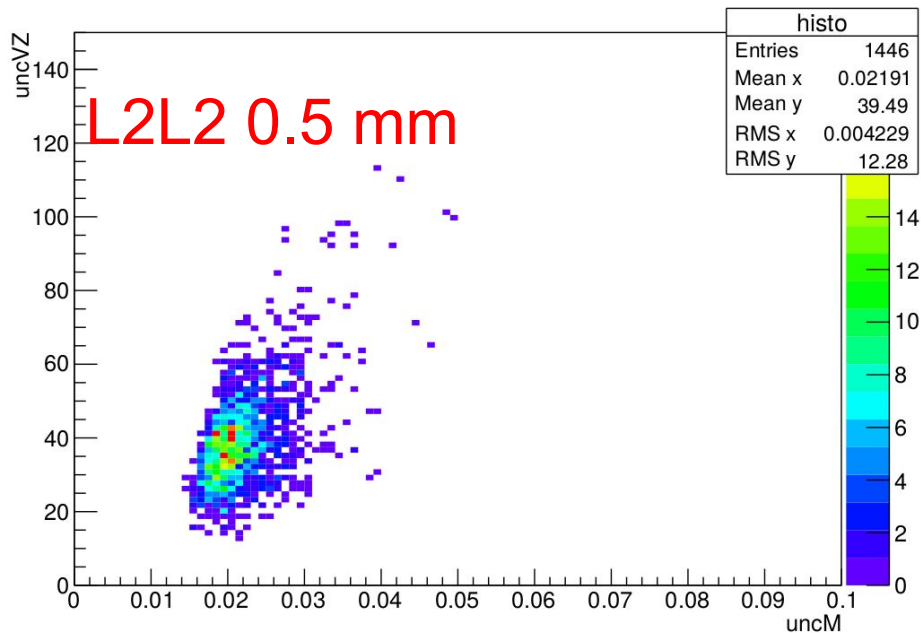


L1L2 1.5 mm Data

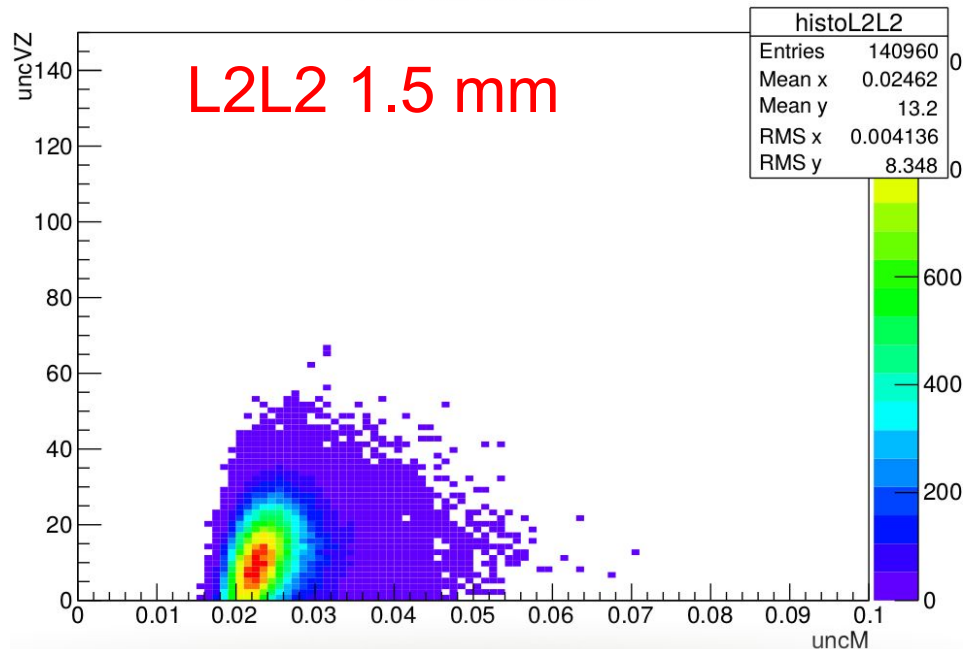


L2L2 Datasets

Data

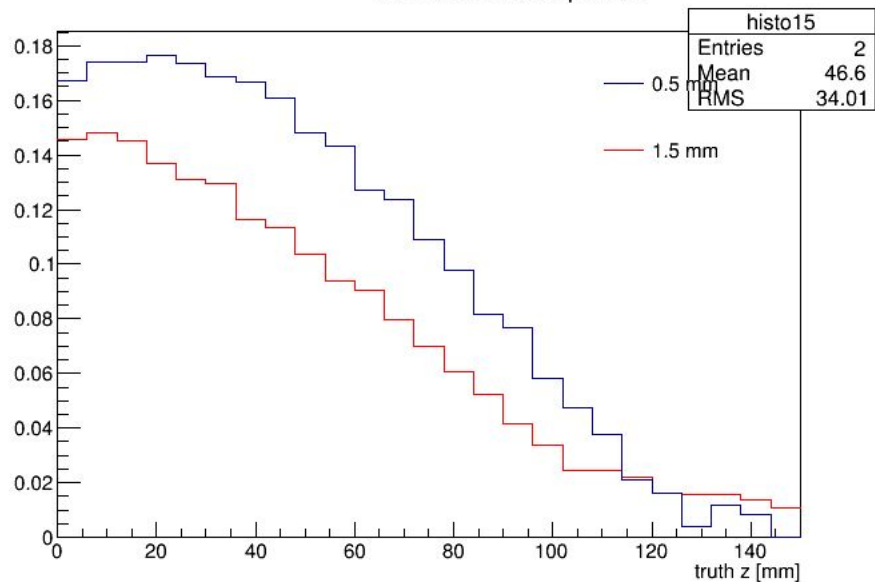


L2L2 1.5 mm Data

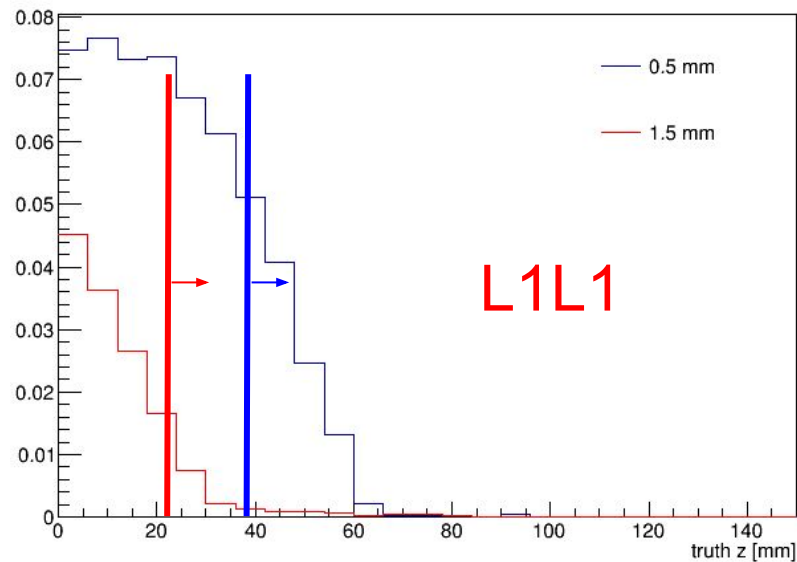


L1L1 Efficiencies

40 MeV A' Acceptance

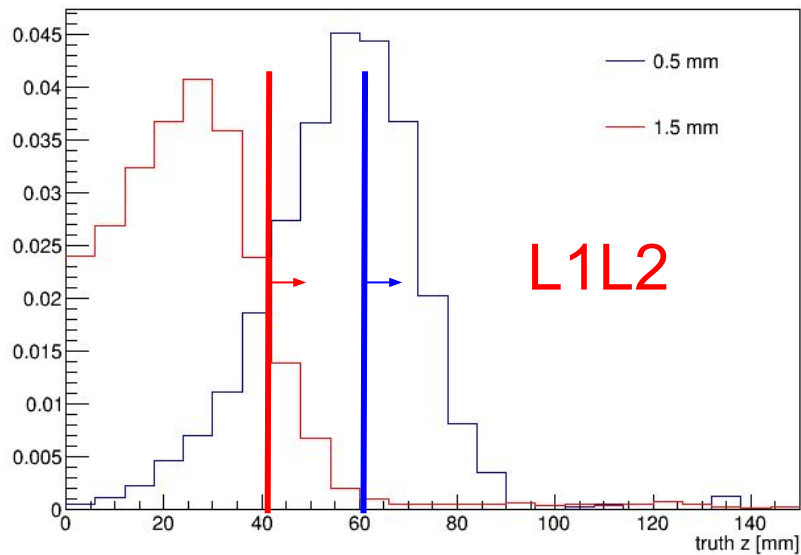


40 MeV Efficiency L1L1

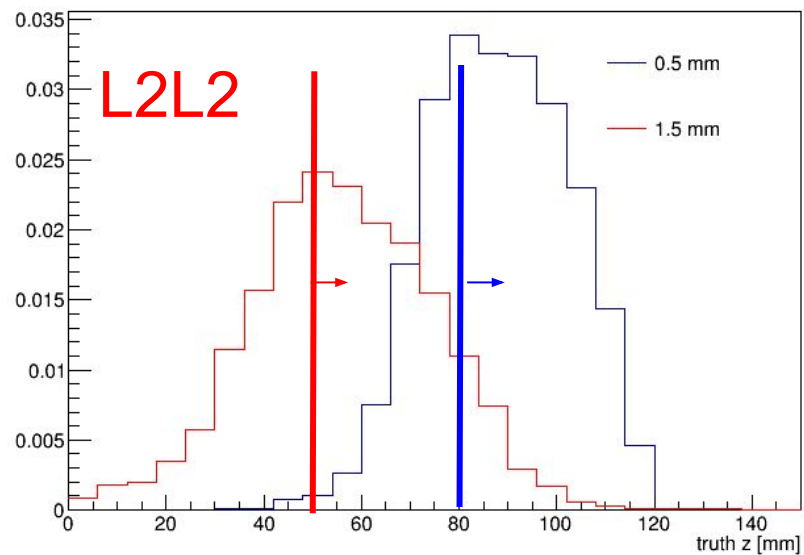


L1L2 and L2L2 Efficiencies

40 MeV A' Efficiency L1L2



40 MeV A' Efficiency L2L2



Conclusion

0.5 mm L1L1 is the meat of the vertexing analysis, should be our focus.

0.5 mm L1L2 and L2L2 we don't gain much, but this is worth understanding for future analysis (we are learning a lot)

1.5 mm we don't gain much, and we don't learn much either. I suggest we don't spend much time on it and just get it out of the way

Is simply adding all 6 datasets sufficient?

tweakPass6 1.5 mm Data

