

# Layer 0 Update

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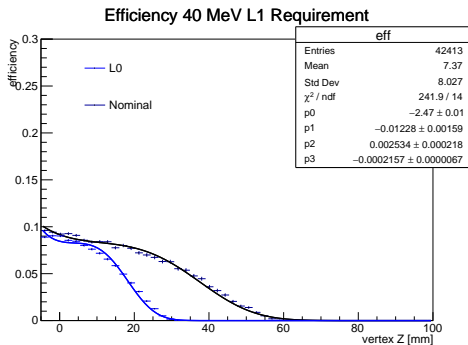
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# Introduction

- ▶ Very preliminary reach results for the comparison between L0 and nominal L1L1 requirement
- ▶ As I will show, it will be necessary to explore other combinations of layer requirements to get a reasonable reach estimate
- ▶ Increased mass bin for a better fit. Good for an initial estimate, but I need more MC.

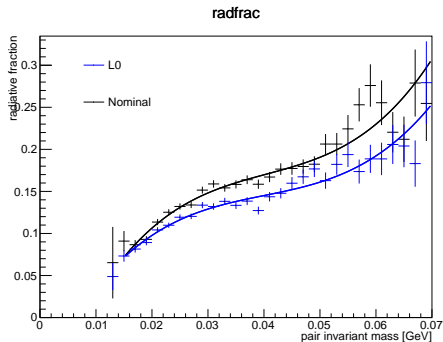
# Acceptance Comparison for L1L1 Requirement

- ▶ Requiring L1L1 hinders acceptance significantly in L0 detector
- ▶ In the very near future, explore all possible combinations of requiring the first 3 layers



# Radiative Fraction

- ▶ Radiative fraction comparison with scaling up of wab cross section in nominal detector to account for extra silicon
- ▶ L0 wab MC coming soon...

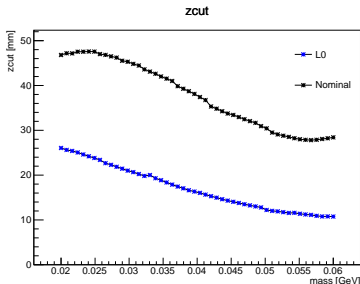
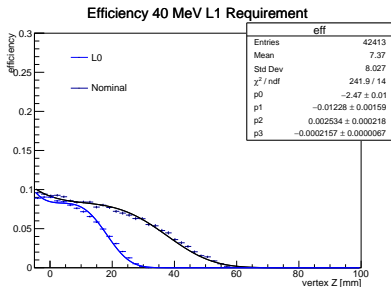


# Reach Calculation

- ▶ Approximately 18000 1/nb (1 week of 200 nA)
- ▶ Distribution of signal events  $\mu_S(z)$  is:

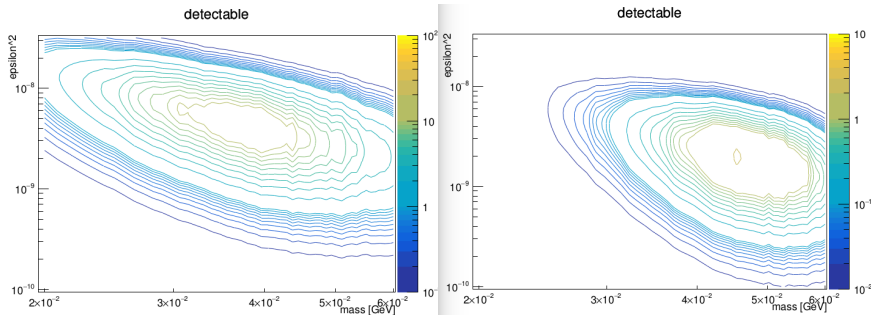
$$\mu_S(z) = (N_{A'} \epsilon_{reco}(z_{targ})) \frac{e^{-\frac{z_{targ}-z}{\gamma_{CT}}}}{\gamma_{CT}} \frac{\epsilon_{reco}(z)}{\epsilon_{reco}(z_{targ})} \epsilon_{cut}(z) \quad (1)$$

- ▶ Number of detectable events is simply  $\int_{z_{cut}}^{z_{max}} \mu_S(z) dz$



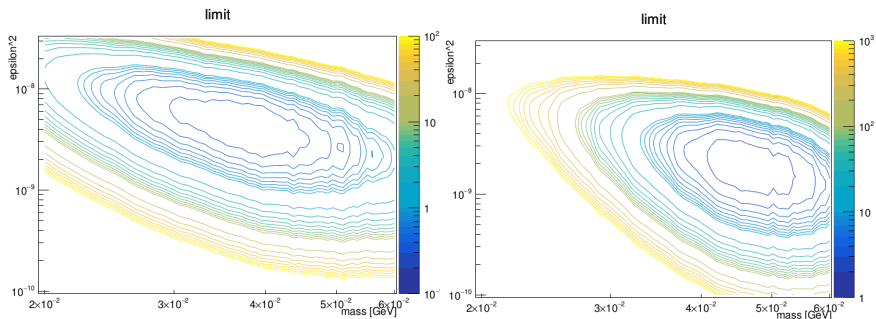
# Number of Detectable A's

- ▶ Left is L0 and right is nominal. Is this reasonable?



# Estimate Reach

- ▶ Left is L0 and right is nominal. Reach is the contour equal to 1. Take results very cautiously.



## In the Future

- ▶ Explore using different combinations of required layer hits. L1L1, L1L2, L1L3, L2L2, L2L3, and L3L3 for L0 detector and L1L1, L1L2, and L2L2 for nominal
- ▶ Calculate number of detectable A's by using the highest efficiency strategy past a zcut for a given z.
- ▶ Currently have a high Z efficiency problem for L0 detector. This is due to several cuts and is currently being explored.

