

Some stuff about 2019 reach

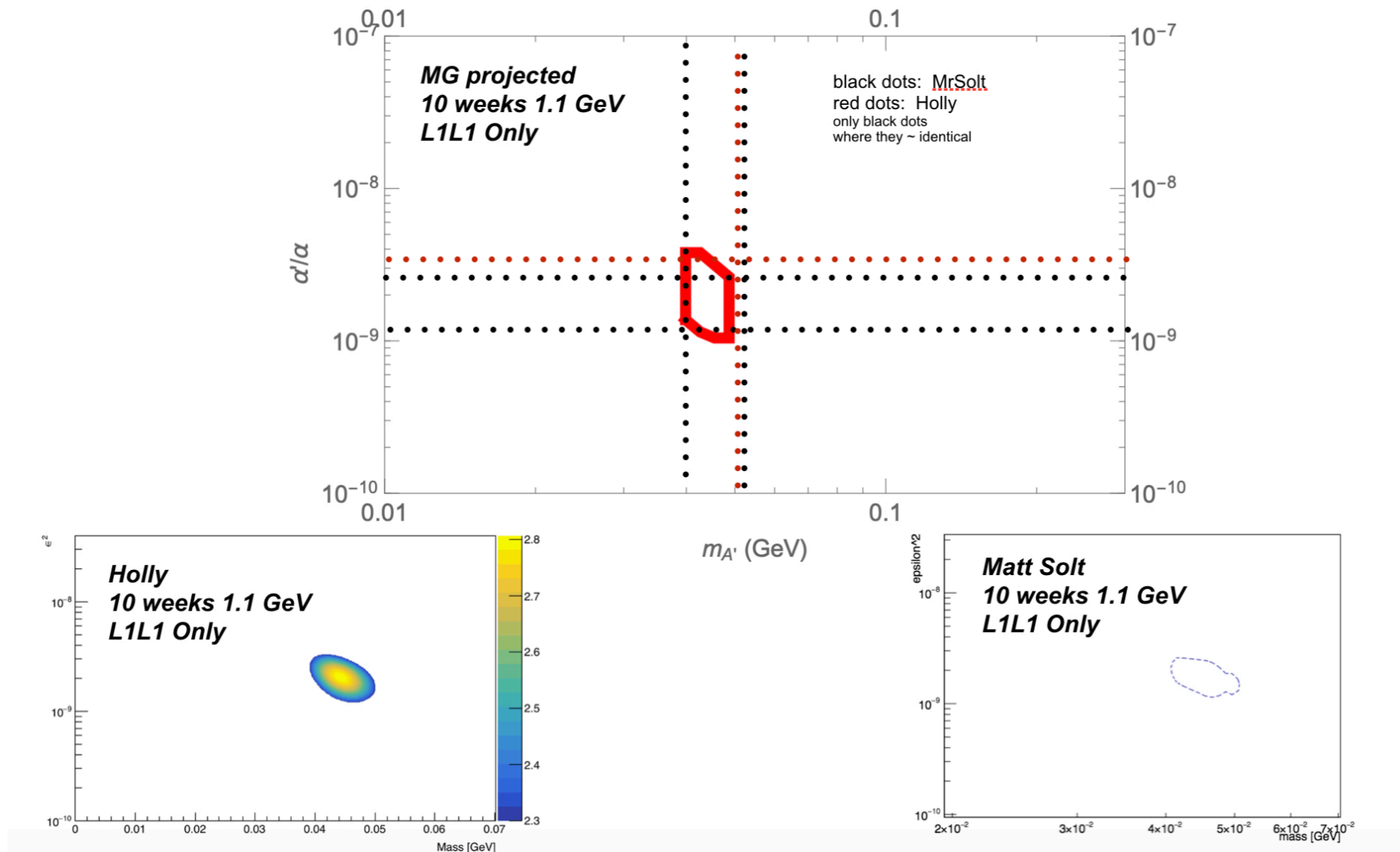
Matt Graham

May 2019 HPS Collaboration Meeting, JLAB

May 31, 2019

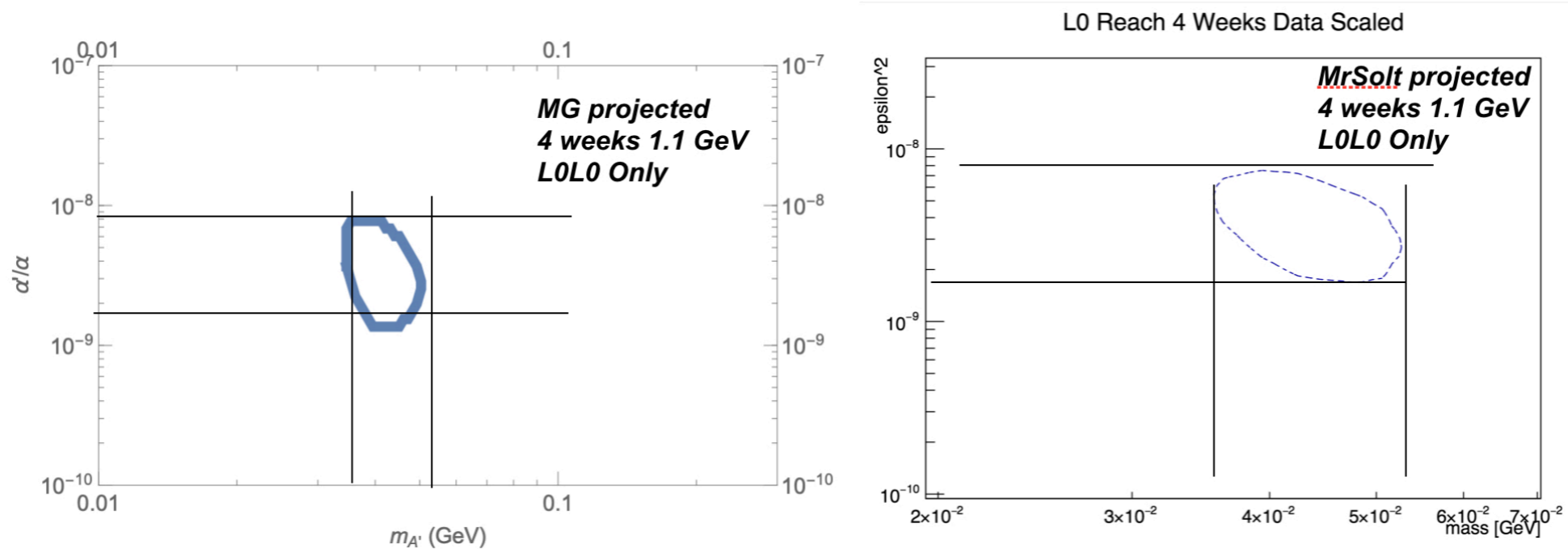
From May 4, 2017 talk

Vertex Reach: nominal detector, 10 weeks @ 1.1 GeV, L1L1 only



From May 4, 2017 talk

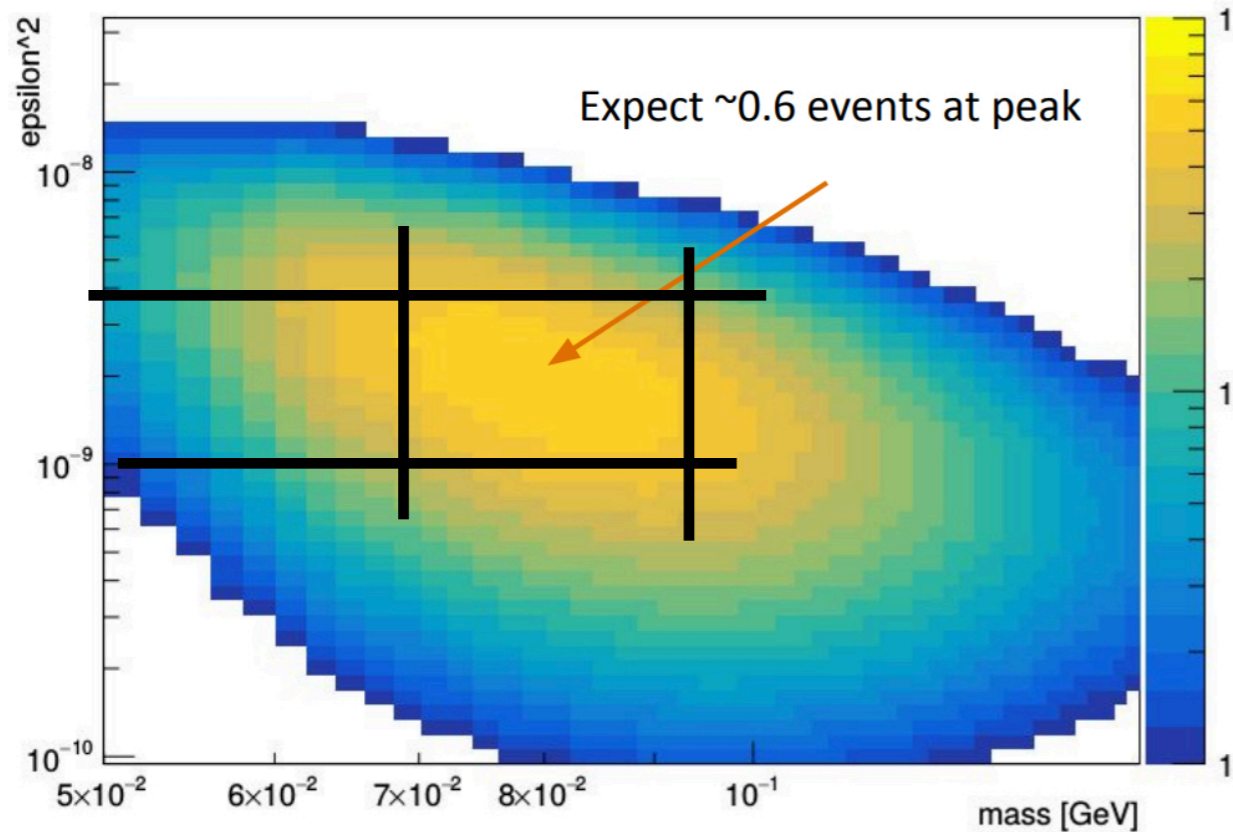
Vertex Reach: L0 detector, 4 weeks @ 1.1 GeV, L0L0 only



For the L0 detectors, I **reduced the Z-cut by x2...**

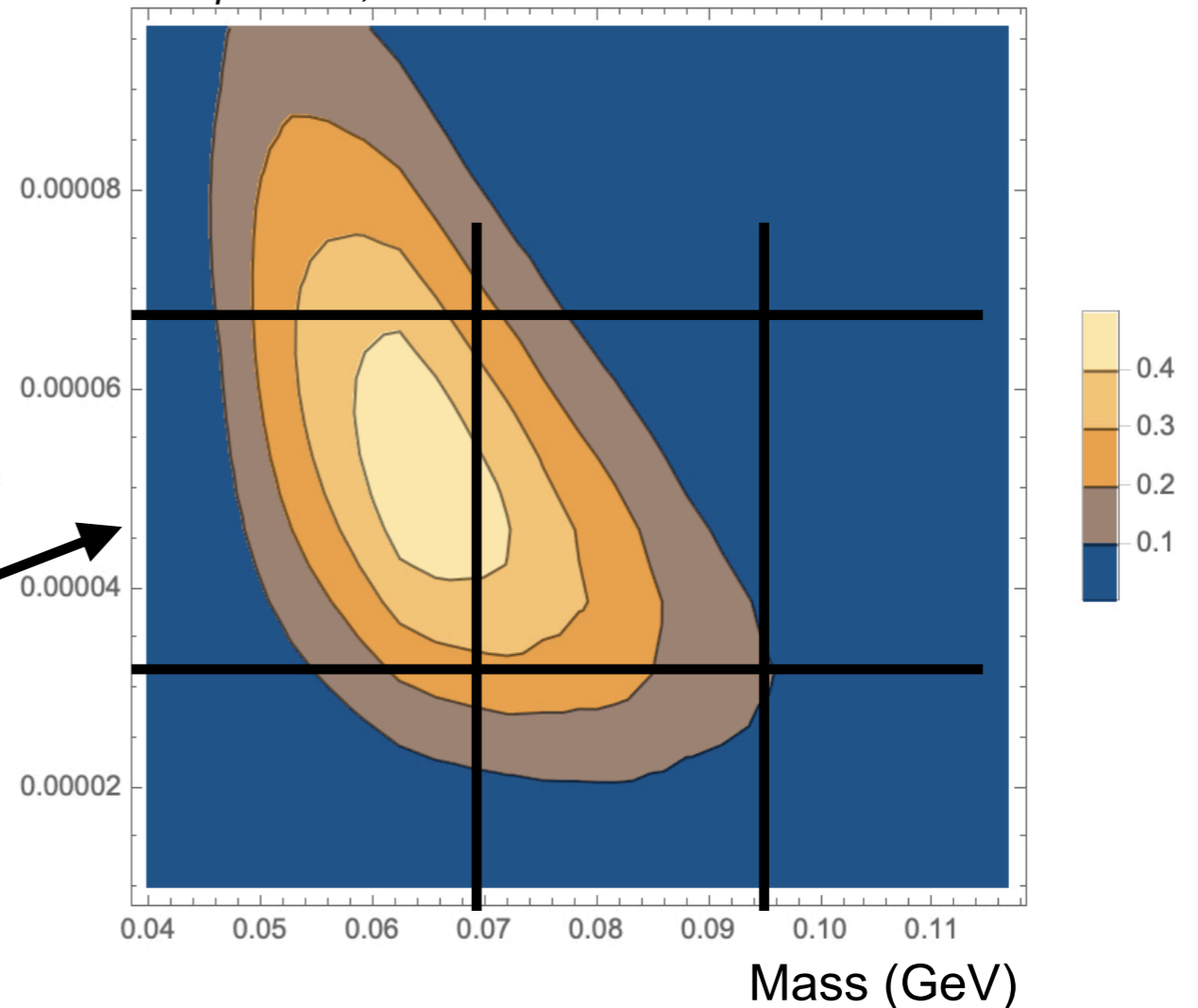
Decent agreement here...maybe we know what we're doing

Comparing 2016 A' Yield Estimates



From MattS' talk at this meeting
extrapolating from 10% 2016 data

Careful, Matt's plot is log-log-log, mine linear-linear-linear
...on top of that, he uses ϵ^2 and me ϵ

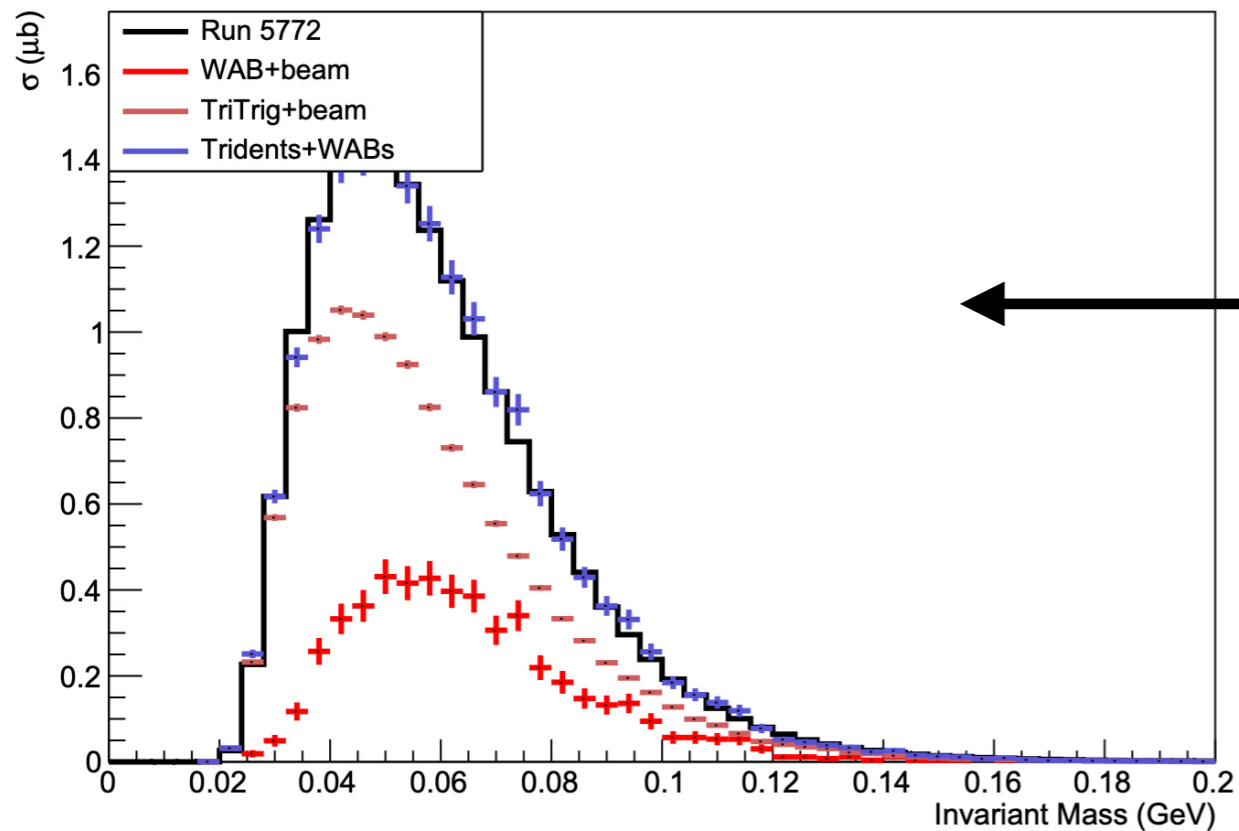


My yield after Z-cut

The peak yield is \sim ok, but my estimates is shifted ~ 15 MeV???

And scaling up from 1.1 seems to say that MattS is right 🙄

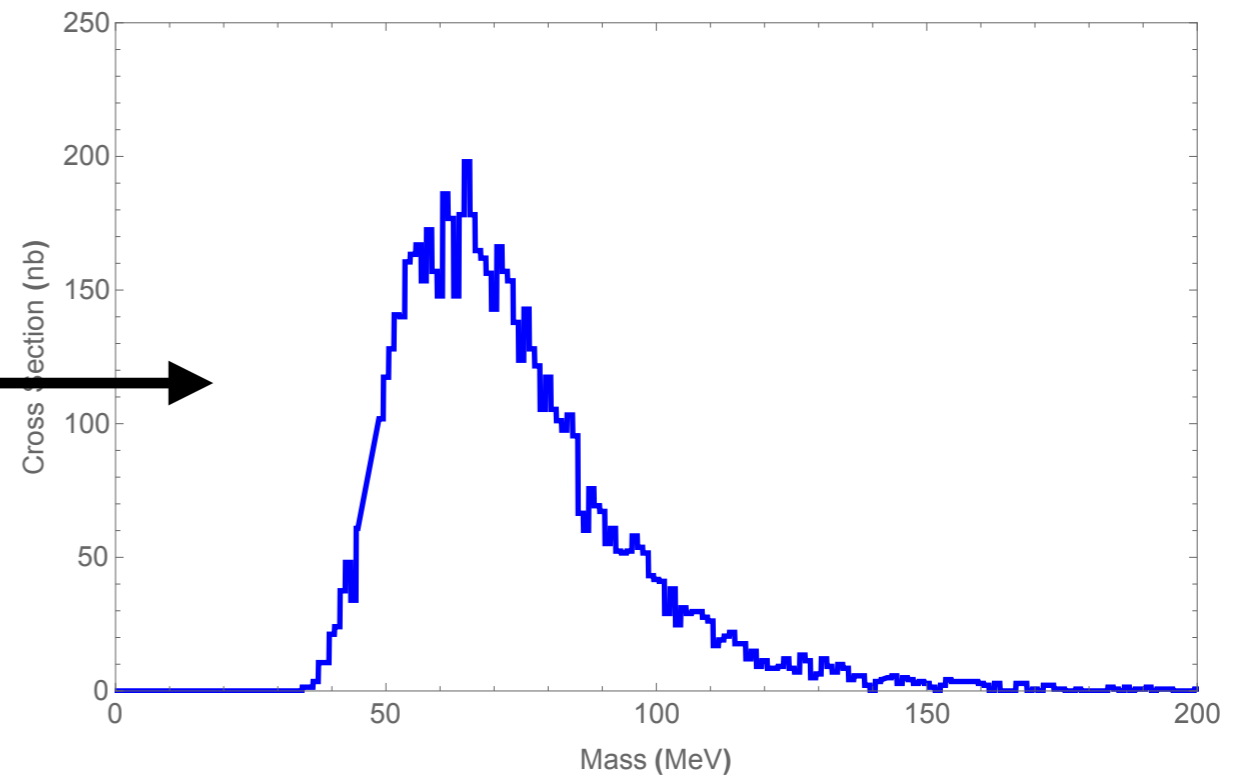
Invariant mass for 2016 Data



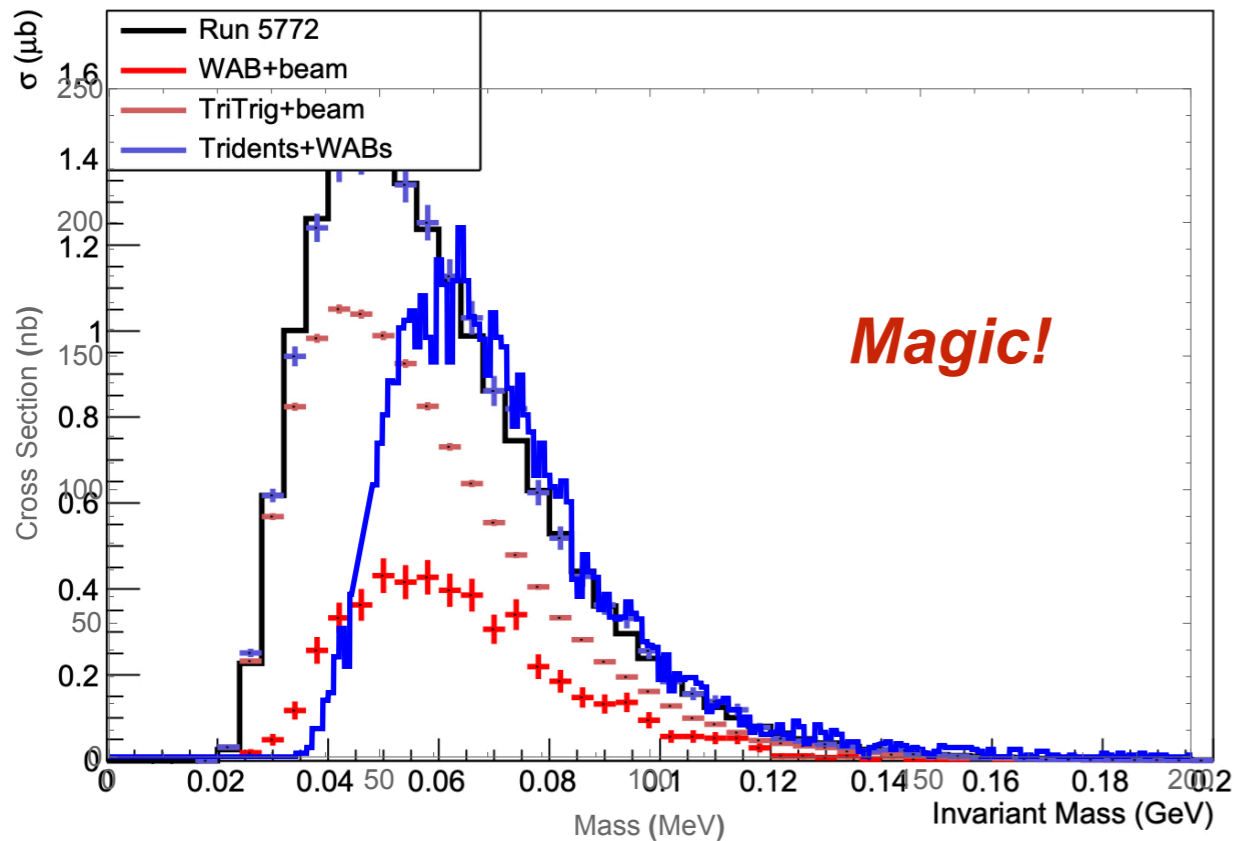
From my talk at this meeting

From input to my estimate

Ignore the scales
on these plots (for this)



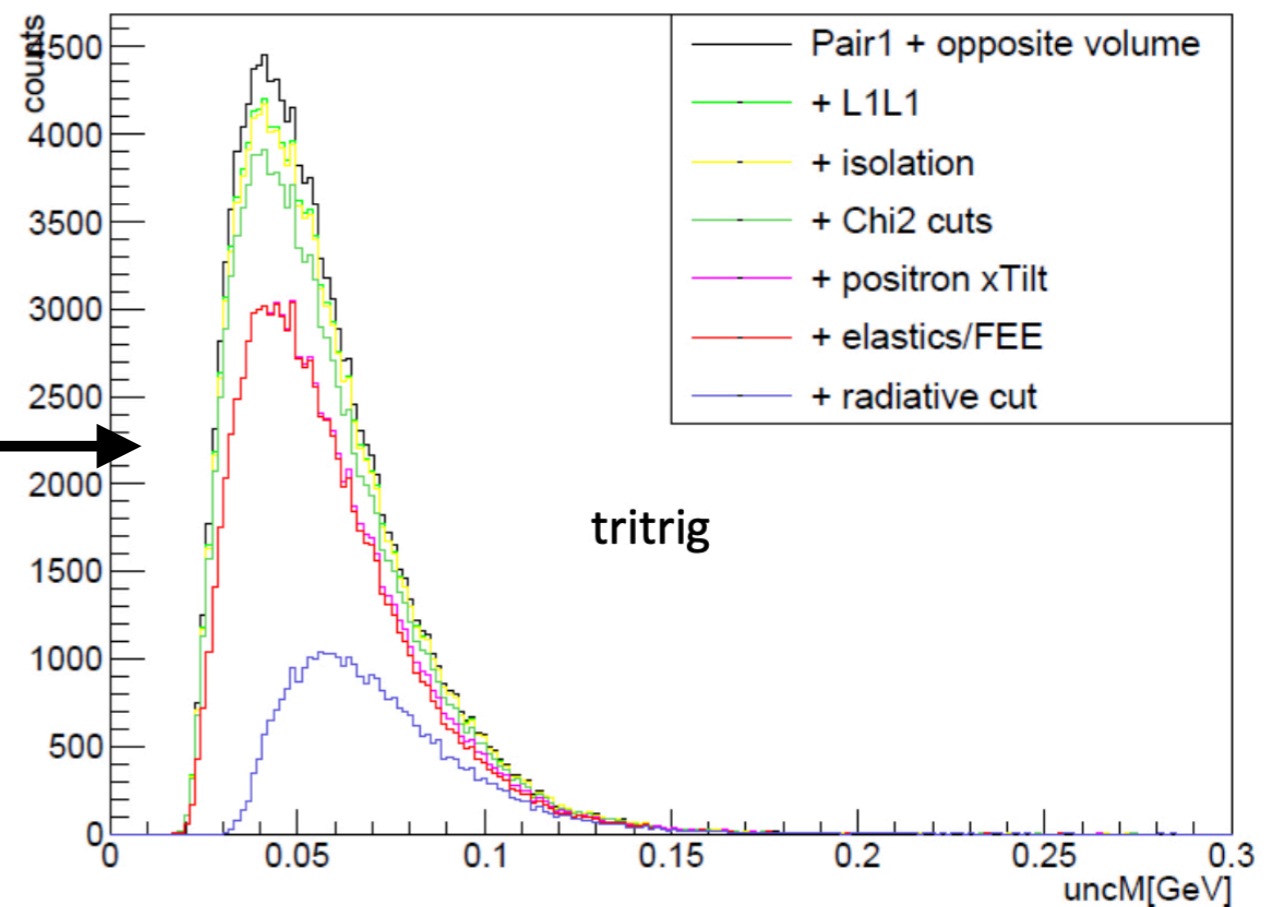
Invariant mass for 2016 Data



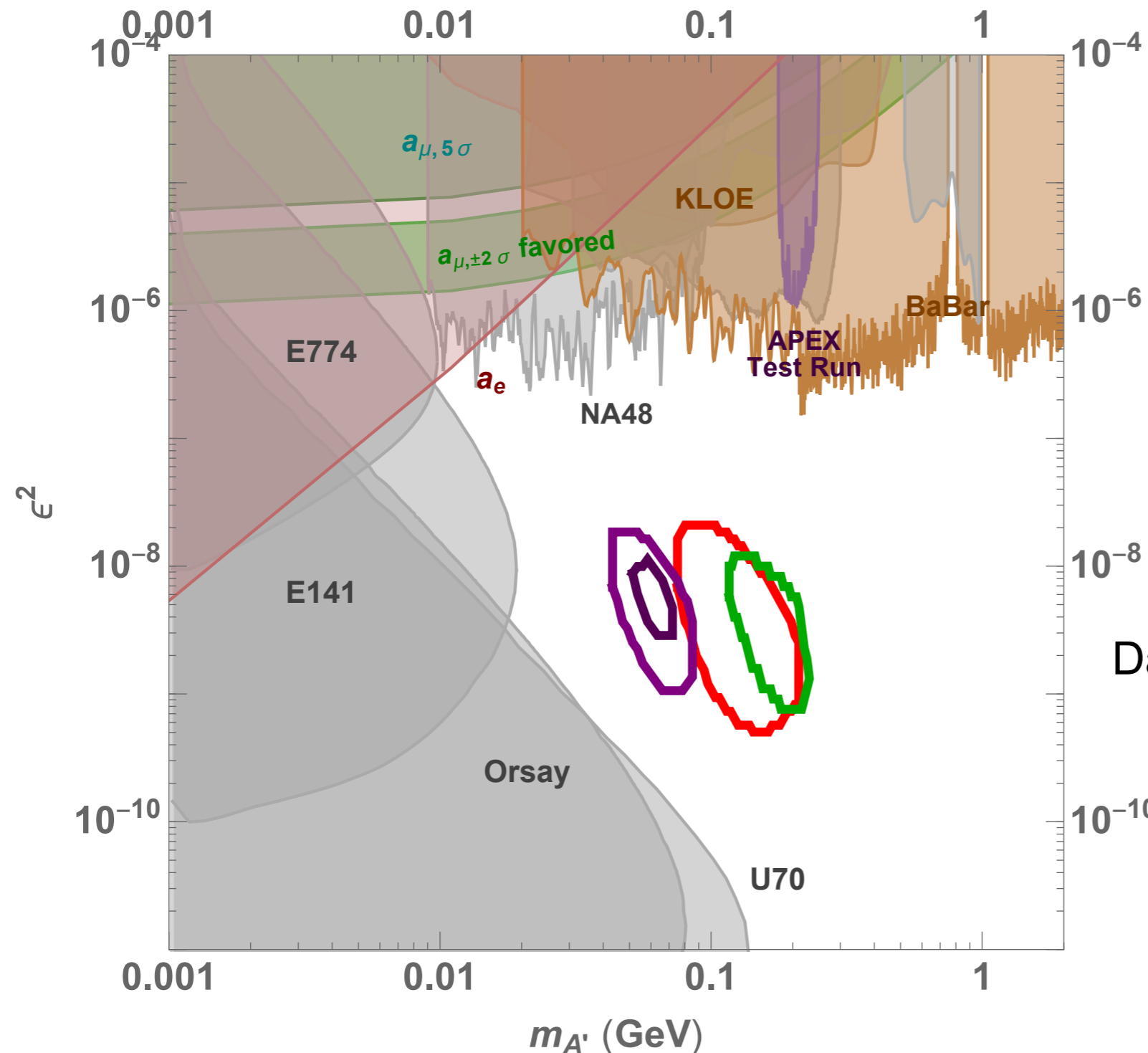
From Bradley's talk
at this meeting

*The radiative cut gets rid of
a lot of the low mass, BH-like
events. Seems ok.*

Invariant Mass Cut Flow (All Tridents)



I'm going to go ahead and hope this stuff is ok...



With L0 geometry & L2 & L3 moved in to 15mrad from target (not as being built, but no slim L1 sensor either)

Also, with positron trigger (assuming full SVT coverage)

Dark Purple — 2.2 GeV, 1 Week
 Purple — 2.2 GeV, 4 Week
 Red — 4.4 GeV, 4 Week
 Green — 6.6 GeV, 4 Week

Should you believe this?

- No, probably not! MattS's doing this with a real analysis and that's how we should be doing are reaches from now on
 - I have said this before
- Looking over some differences between MattS & my estimates
 - Zcut — mine are very flat vs mass; MattS has a decreasing value of Zcut
 - radiative fraction — mine is smaller (~6%) and increasing with mass...he used 10% flat.
- To reiterate, we should be doing these reach estimates with real data and “real” MC with a real analysis!!!
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