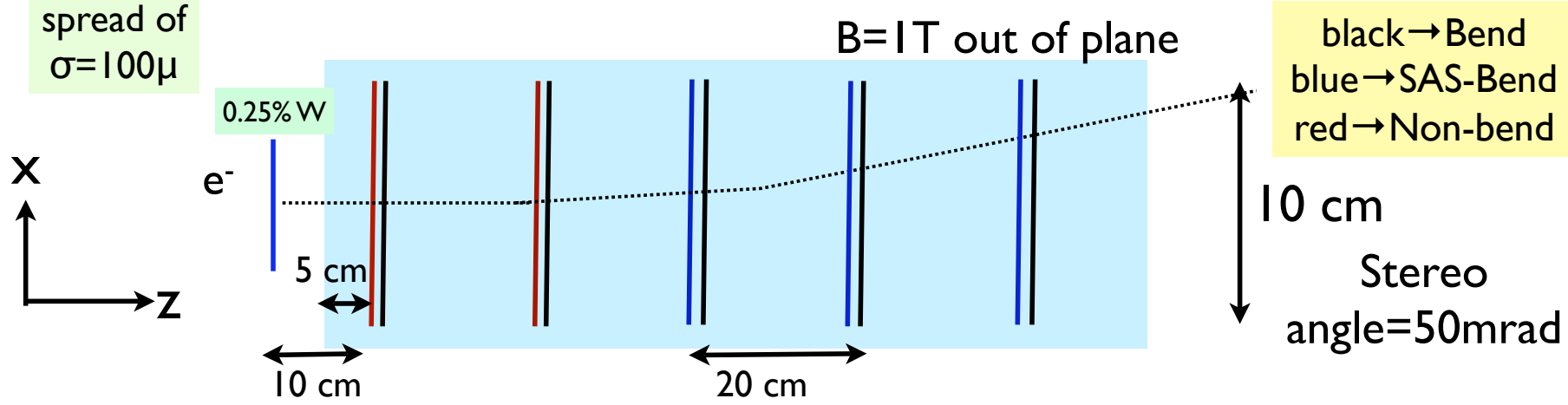
# Layout and Setup...v2.8

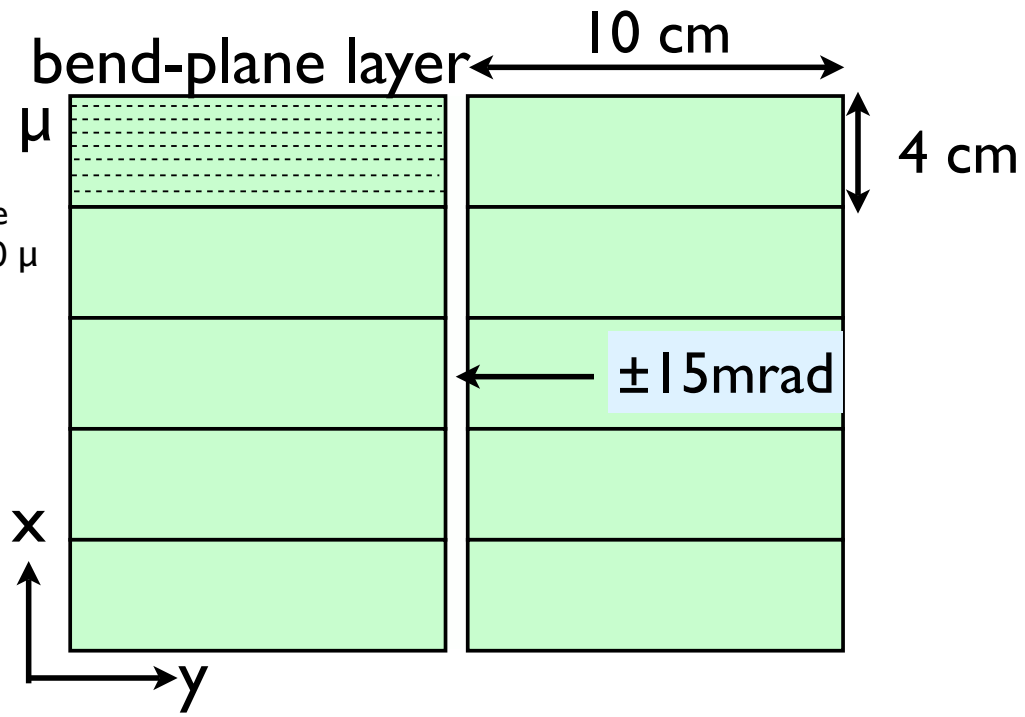
xy beam spread of σ=100μ




Silicon is 300μ thick, "services"=0.2%/layer; detector is in ***vacuum***

readout chip=APV25
→7.5 ns integration

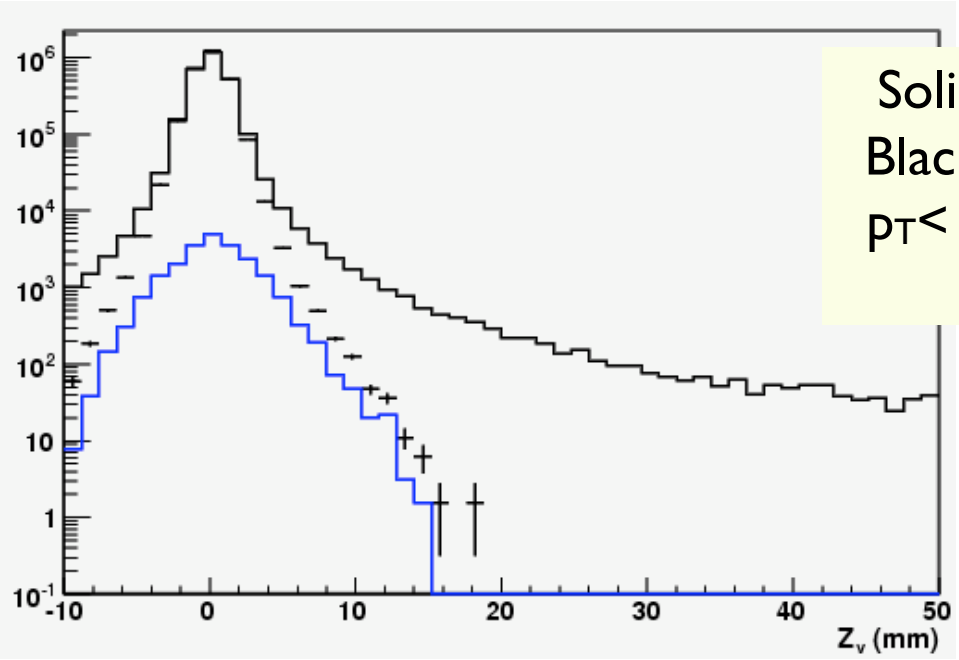
pitch=60 μ
with intermediate strips every 30 μ




I am trying to use coordinates consistent with everyone else...these are not what's used in lcsim

# Lot's of A' events...

200MeV A´ decays @ 0cm in 0nA




Solid Black: good e+e- tracks
Black Errors: &&$|V_T|$<200μ&&
$p_T$<100MeV&&$\chi^2$(vertex)<250
Blue: &&>0 mishits

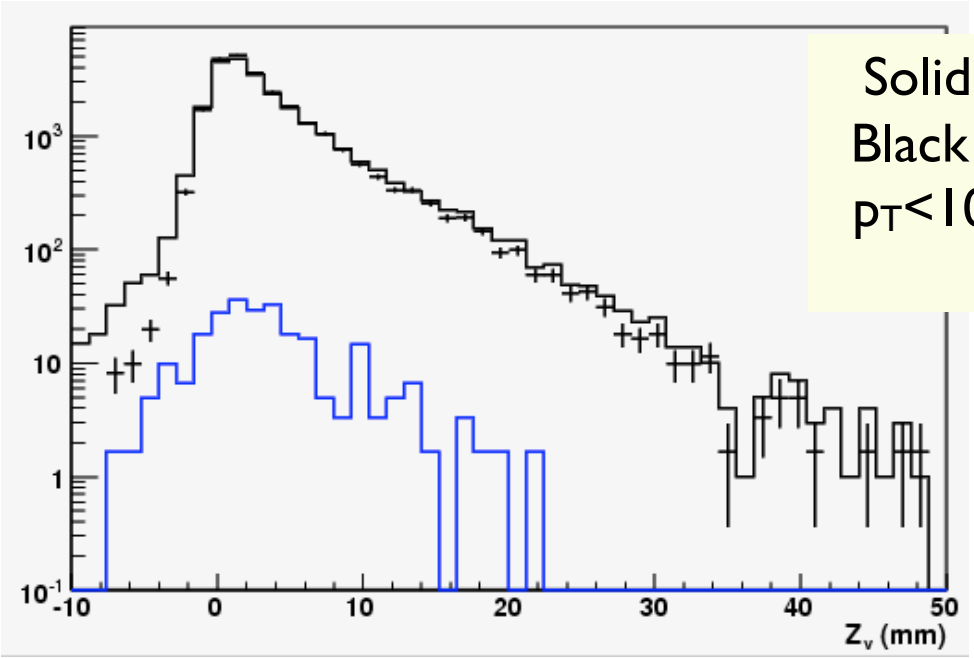
No pileup!

Original sample ~10M events...looks good!

| | "ϵ(A´)" | RMS($Z_v$) | f(>4mm) | f(>1cm) |
|---|---|---|---|---|
| Loose (solid) | ~0.23 | 1.73 | 0.021 (0.25) | 0.0036 (0.49) |
| Tight (errors) | ~0.15 | 1.13 | 0.007 (0.16) | >0.0001 (0.41) |

# "Realistic" Signal

200MeV A´ decays with ctau=1cm in 0nA




Solid Black: good e+e- tracks
Black Errors: &&$|V_T|$<200μ&&
$p_T$<100MeV&&$\chi^2$(vertex)<250
Blue: &&>0 mishits

No pileup!

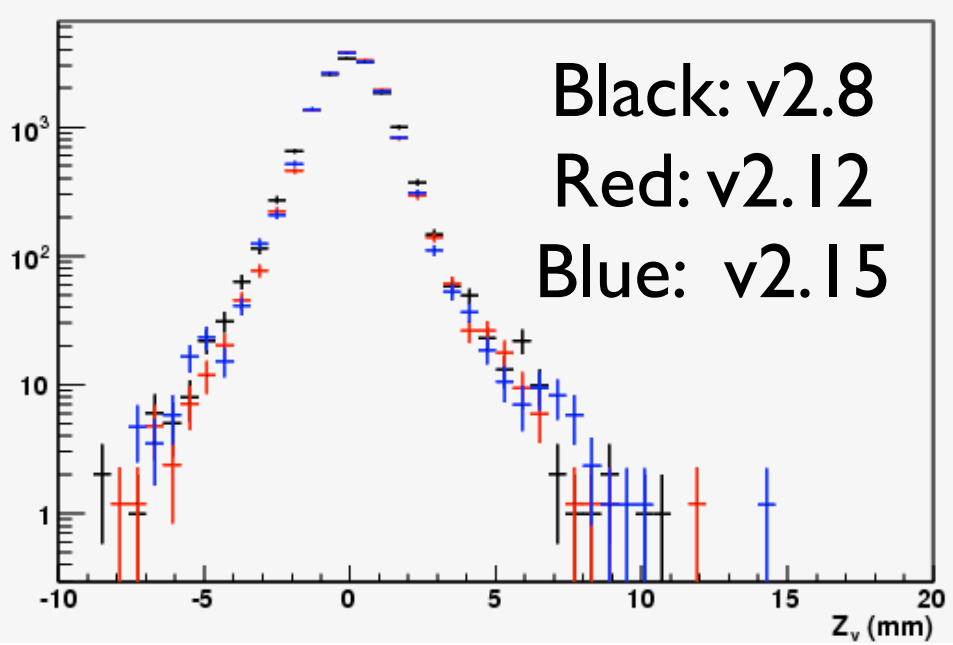
Took (smaller) sample, but with a lifetime and ran reco/cuts to make sure we weren't just rejecting any vertex separated from target (even real ones)...looks ok....

# v2.8 vs v2.12 vs v2.15...

200MeV A´ decays @ 0cm in 400nA

v2.12 = v2.8 with $X_0$=0.2/plane

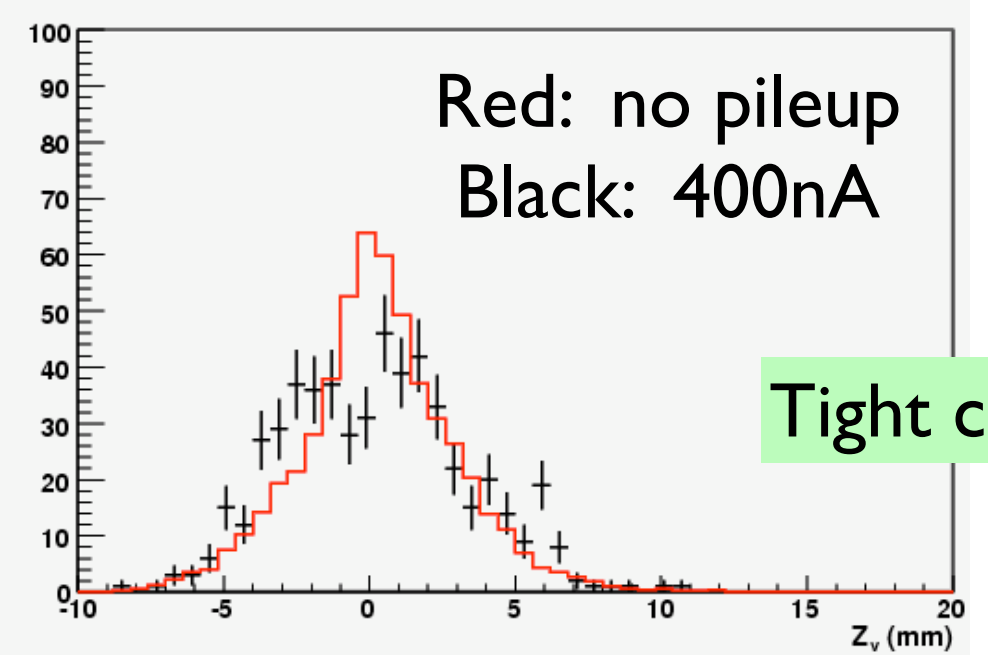
v2.15 = v2.12 with smaller gaps




behavior is as expected:
--v2.12 has a bit narrower distribution than v2.8
--v2.15 is narrower than v2.8 but wider than v2.12
--occupancy in 3rd plane increases by ~x2 for v2.15

Effects are at the ~5-10% level

# $Z_v$ with mishits: with and w/o pileup




Tight cuts && mishit>0

Like to use the huge A' sample to tracks with mishits...but do they behave the same as events with pileup? Not particularly...