200 MeV @ 5.5 GeV and 400nA, 10μ
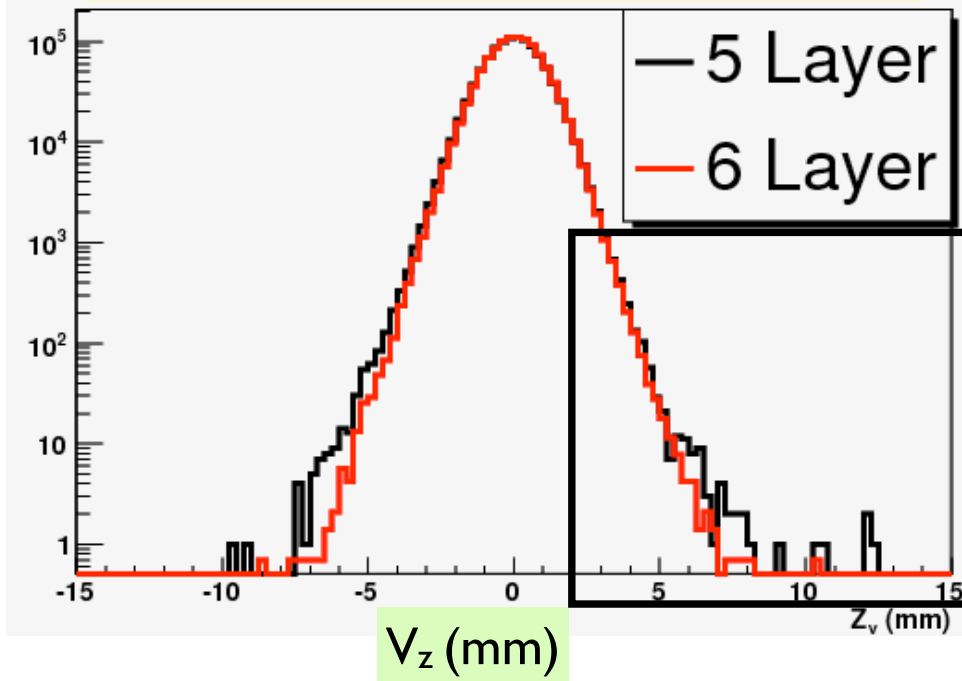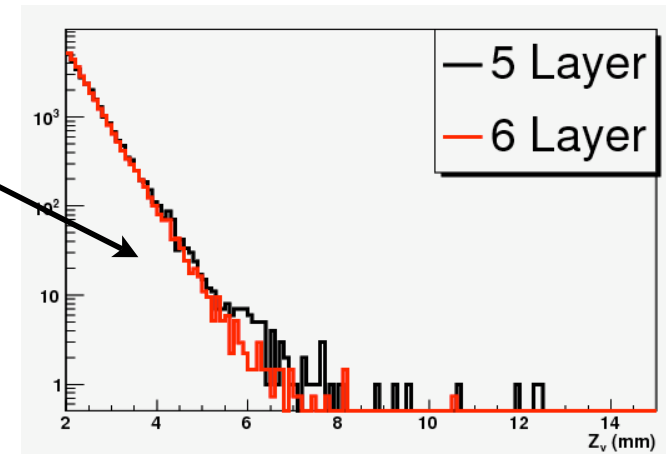
V_z (mm)
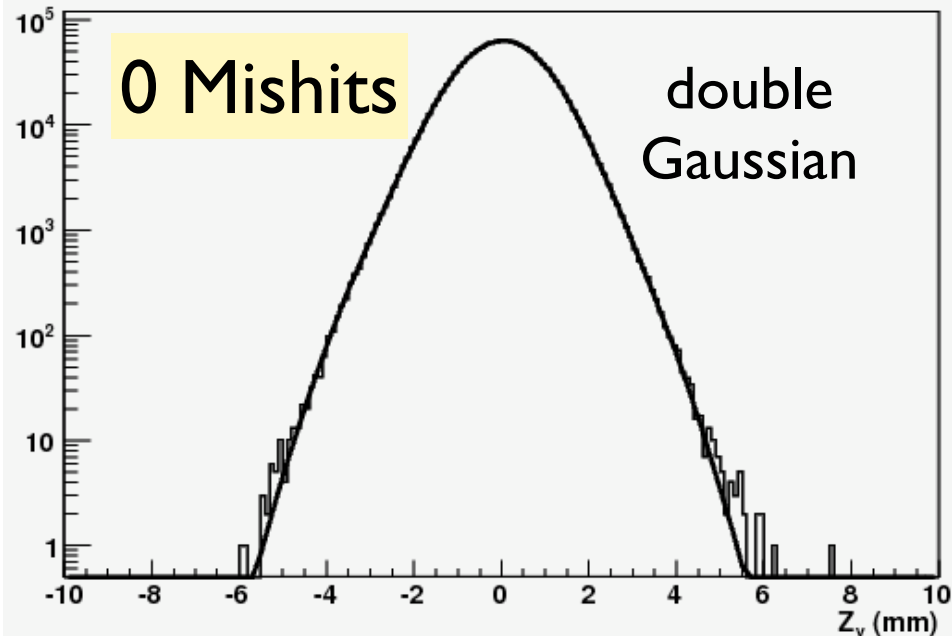
Track $\chi^2 < 20$
$190 < M(e^+ e^-) < 210$ MeV
V0 Momentum < 5.5GeV
Constrained Vertex $\chi^2 < 15$
$V_x < 0.4$ mm && $V_y < 0.4$ mm

	5-layer	6-layer
>2mm	2.3×10^{-2}	2.2×10^{-2}
>3mm	2.8×10^{-3}	2.5×10^{-3}
>4mm	3.9×10^{-4}	3.1×10^{-4}
>5mm	8.4×10^{-5}	5.1×10^{-5}
>7.5mm	1.0×10^{-5}	2.7×10^{-6}
>10mm	4.7×10^{-6}	0.7×10^{-6}
>12.5mm	2.8×10^{-6}	0^*

f(mishit, 5-layer)=6.4×10^{-3}
f(mishit, 6-layer)=4.6×10^{-3}
...tails still dominated
by mishits

0 Mishits — double Gaussian

Getting down to 10^{-7}...
we have ~1.5×10^6 reconstructed
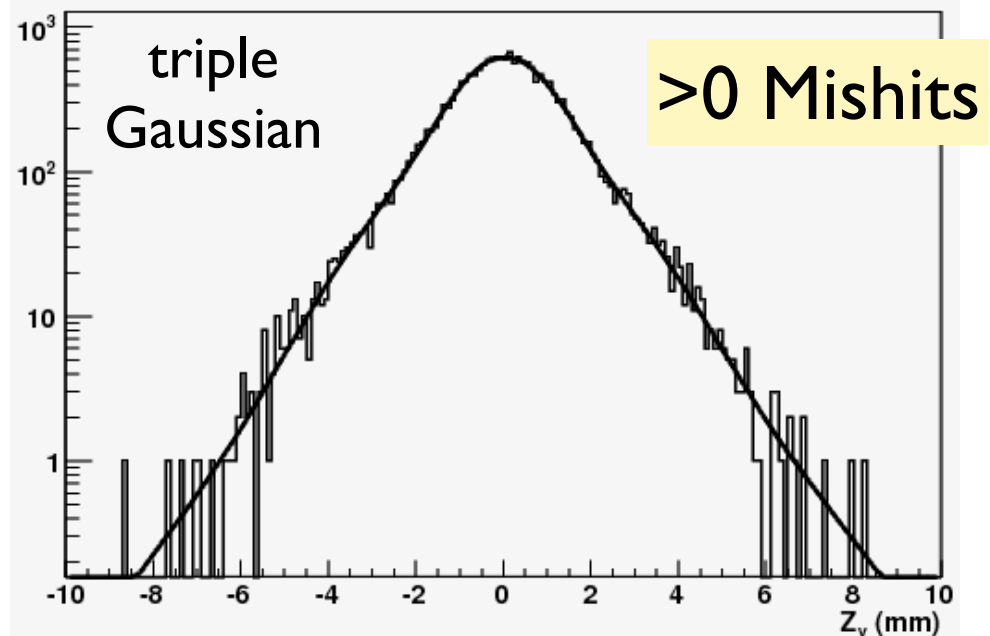A' events; either run x10 more
or we can try to extrapolate.

As a first pass, fit 0 mishit and
>0 mishit separately; integrate
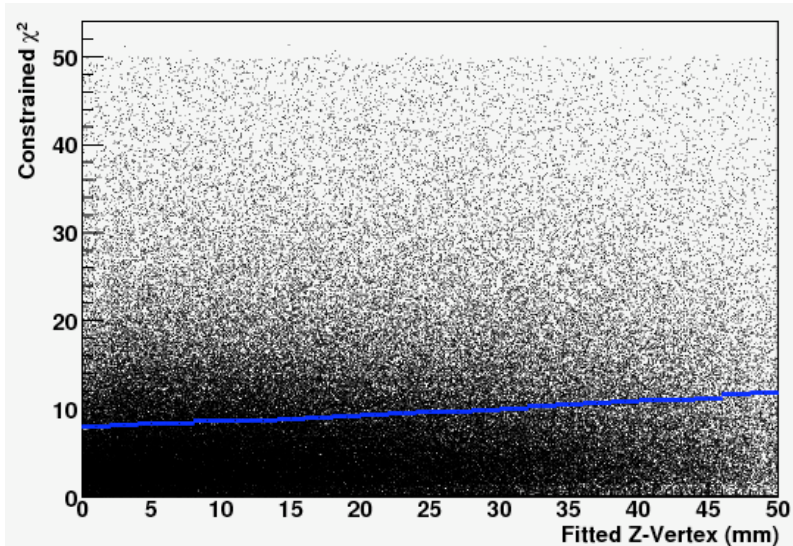the functions to find rejection.

For the 6-layer layout:
1×10^{-5}: $Z_{cut} > 6.4$mm
1×10^{-6}: $Z_{cut} > 8.8$mm
1×10^{-7}: $Z_{cut} > 10.8$mm

triple Gaussian — **>0 Mishits**

Wait! Does the constraint kill actual displaced A' decays?

...generate flat decay from 0 to 5cm. The reco efficiency decreases with flight length (requiring layer 1), but the vertex constraint cut is fairly uncorrelated.

...and the reconstructed vertex position follows the truth very well!