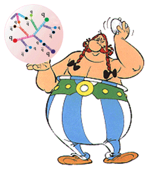
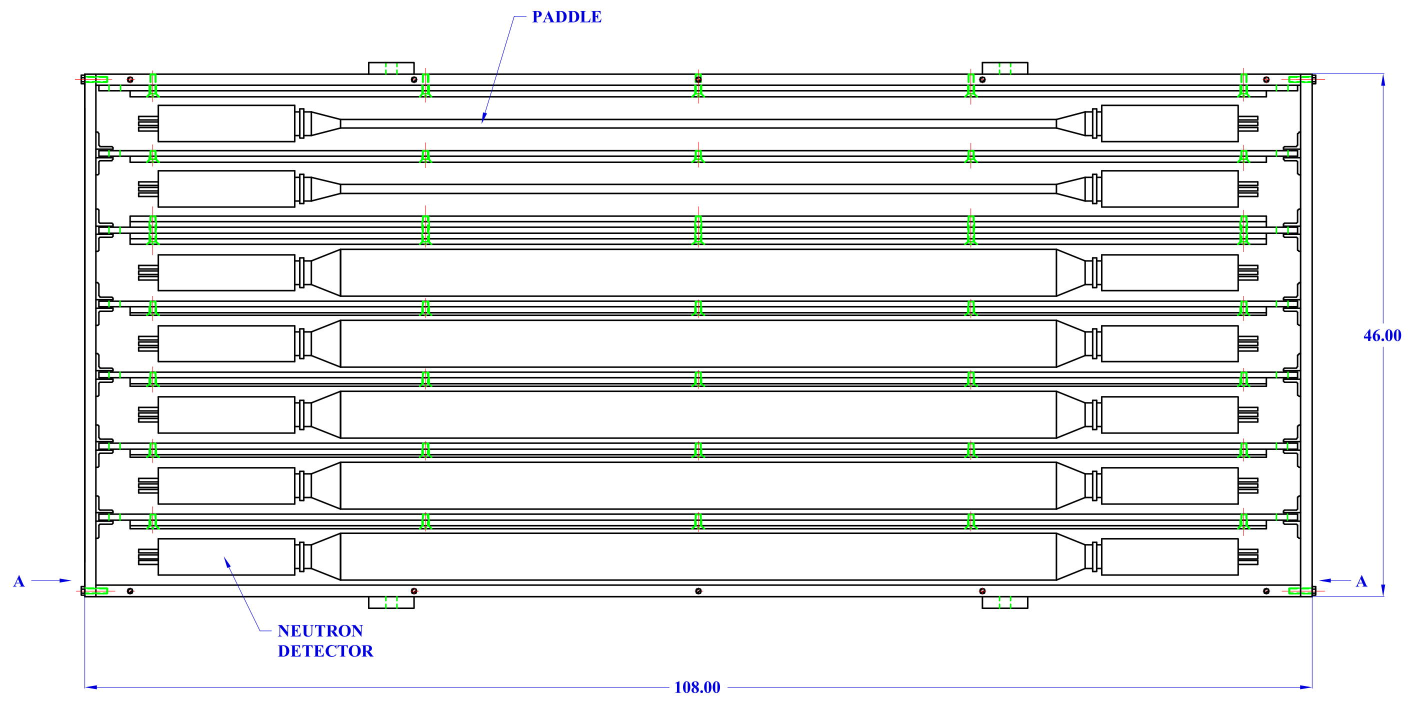


G_E^n February Test Run Results

kinematics:

$E_{beam} = 3.028$ GeV, $Q^2 = 3.245$ (GeV/c)^2

LHRS	Neutron
$P_e = 1.306$ GeV/c	$P_n = 2.49$ GeV/c
$\theta_e = 53.87°$	$\theta_n \sim 25°$



TOP VIEW OF SHIELDING BOX
WITH NEUTRON DETECTOR AND PADDLES


N18
N17

Outline of Test Run Conditions

Single Arm

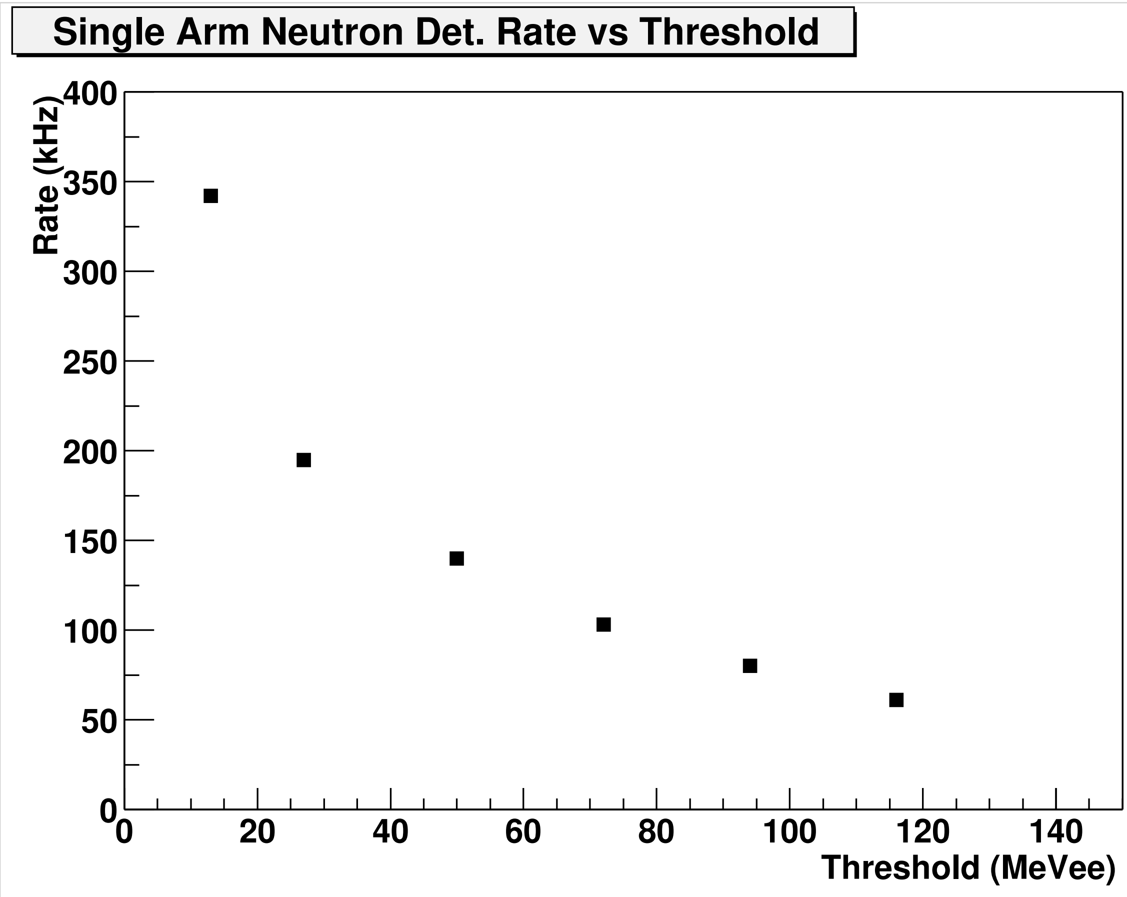
Goal: Study the rate on the neutron trigger versus the trigger discriminator threshold on the summed signal of all neutron bars

$\rightarrow$ Study Empty Target, Reference Cell, ^{12}C multifoil

Coincidence

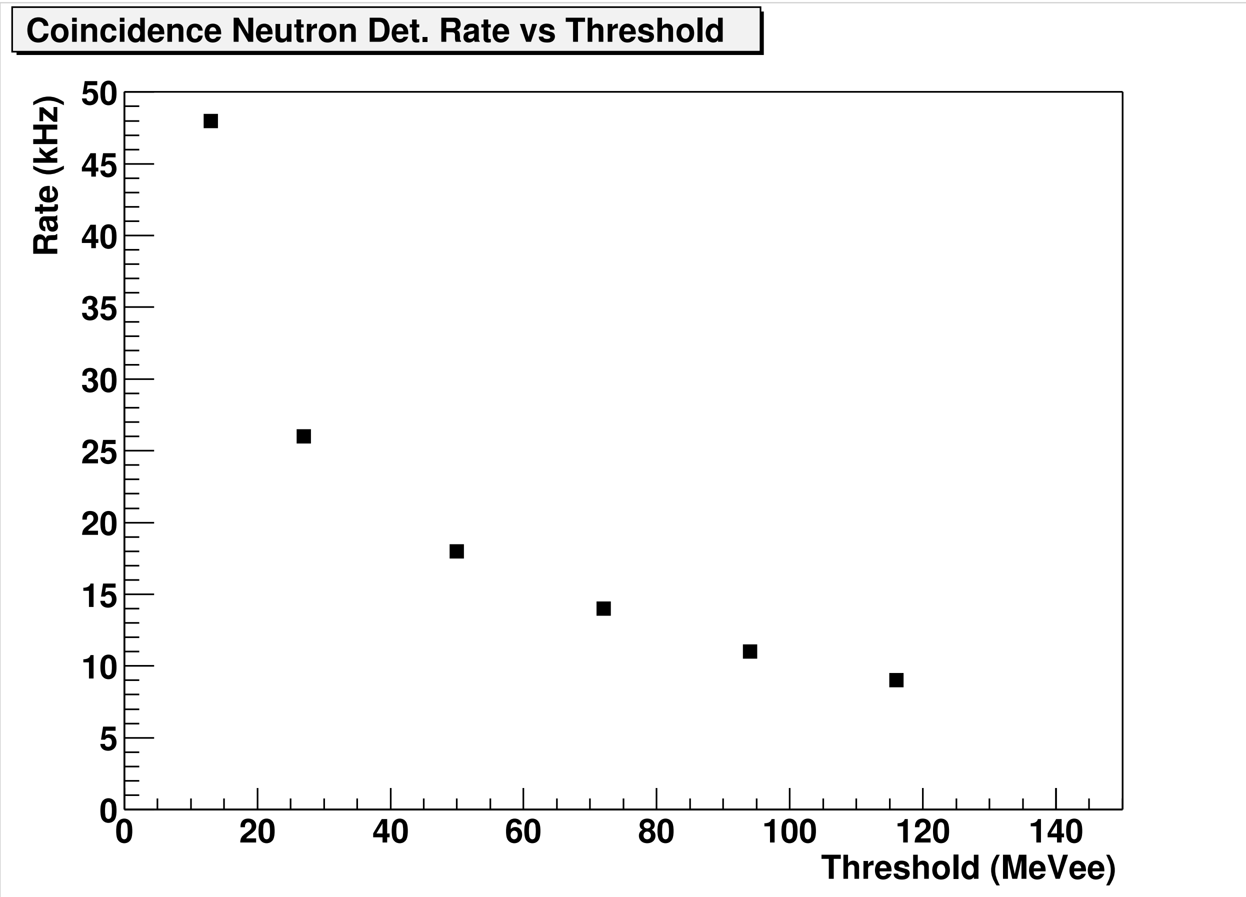
Trigger: Read out the neutron detector with each electron trigger (regular S-Ray)

$\rightarrow$ Study Empty Target, ^{12}C multifoil, 40 cm $^{3}\vec{He}$
(Polarization $\sim$ 31%)



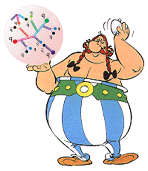
Test Conditions

- $I = 5\ \mu A$
- target = BeO + ^{12}C
  $\rightarrow$ Total Thickness $\sim 750\ mg/cm^2$



Test Conditions

- I = 0.5 μA
- target = 40 cm $^3\vec{He}$
  $\rightarrow$ Total Thickness $\sim$ 770 mg/cm^2



Extrapolation to E02-013 Running Conditions

I $=$ 15 μA, 10$\times$ as many neutron detectors

$\rightarrow$ 18 kHz $\times\frac{15\mu A}{0.5\mu A}\times$ 10 $=$ 5.4 MHz

We can accomodate $\sim$ 1 MHz on the neutron detector with the expected electron rate, keeping the DAQ rate around 3 kHz

$\rightarrow$ Collimate and lower window thickness to achieve less than 150 mg/cm^2 thickness