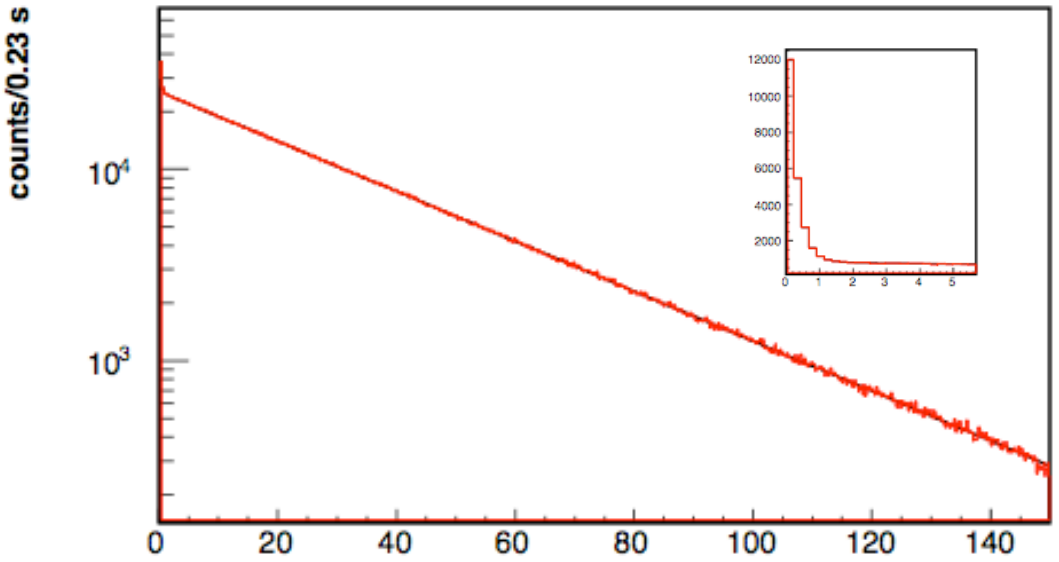
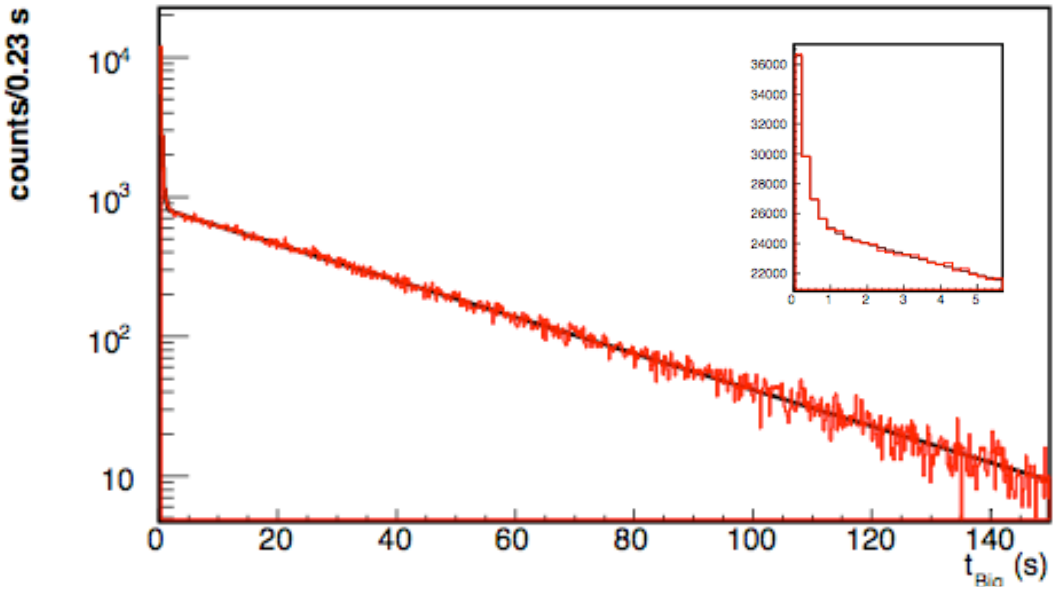
Near detector

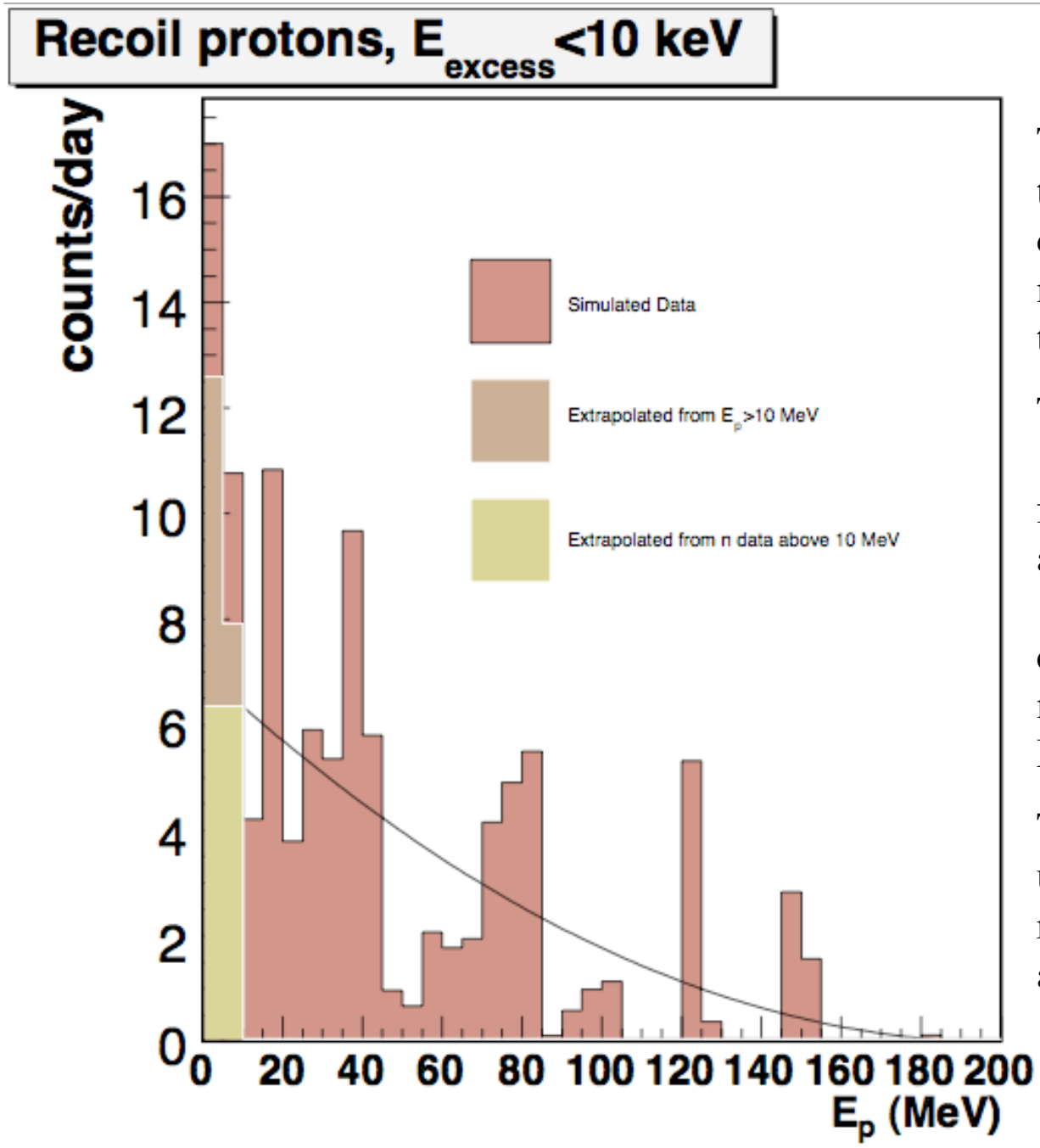


Far detector



We make use of the 0.178 ms half-life of ^{9}Li to statistically separate from IBD events: ^{9}Li decay occur a few half-lives after a big event while IBD events occur with a time constant of 33 s after a big event.

Counting IBD events in this way makes the IBD rate insensitive to the ^{9}Li rate: changing the ^{9}Li by a factor of three does not change the measured IBD rate.



The recoil proton spectrum in the IBD region (1-10 MeV) consists of two contributions: neutrons above 10 MeV and those between 1 and 10 MeV.

The contribution form above 10 MeV is known precisely from the recoil spectrum above 10 MeV. The part from 1-10 MeV may be extrapolated from the inferred neutron spectrum above 10 MeV.

This results in a 30% underestimate for the IBD region, which is known to about 30%.

Background rates in fiducial region (r<2600 mm)

Source	Rate	In situ measurement
^{9}Li, E_{vessel}>1 GeV	24/day[2]	<9%
^{9}Li, E_{vessel}<1 GeV	0.06/day	<30%
Recoil protons 0.8<K_p<8 MeV E_{excess}<0.1 MeV E_{veto}<10 keV	0.6/day[1]	~30%
Above with 99% tagging efficiency	1.6/day	~30%

- E_{vessel} - total energy deposited in vessel
- K_p - recoil proton energy
- E_{veto} - total energy in 3 cm Ar:CO_2 filled tagger counters
- $E_{excess}=E_{vessel}-K_p$, energy in vessel in excess of proton recoil energy

[1]Monte Carlo rate scaled up by factor of five from sheet/line study.

[2]Monte Carlo rate scaled up by factor of two from comparison with toy model