Queen Mary
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SNO+

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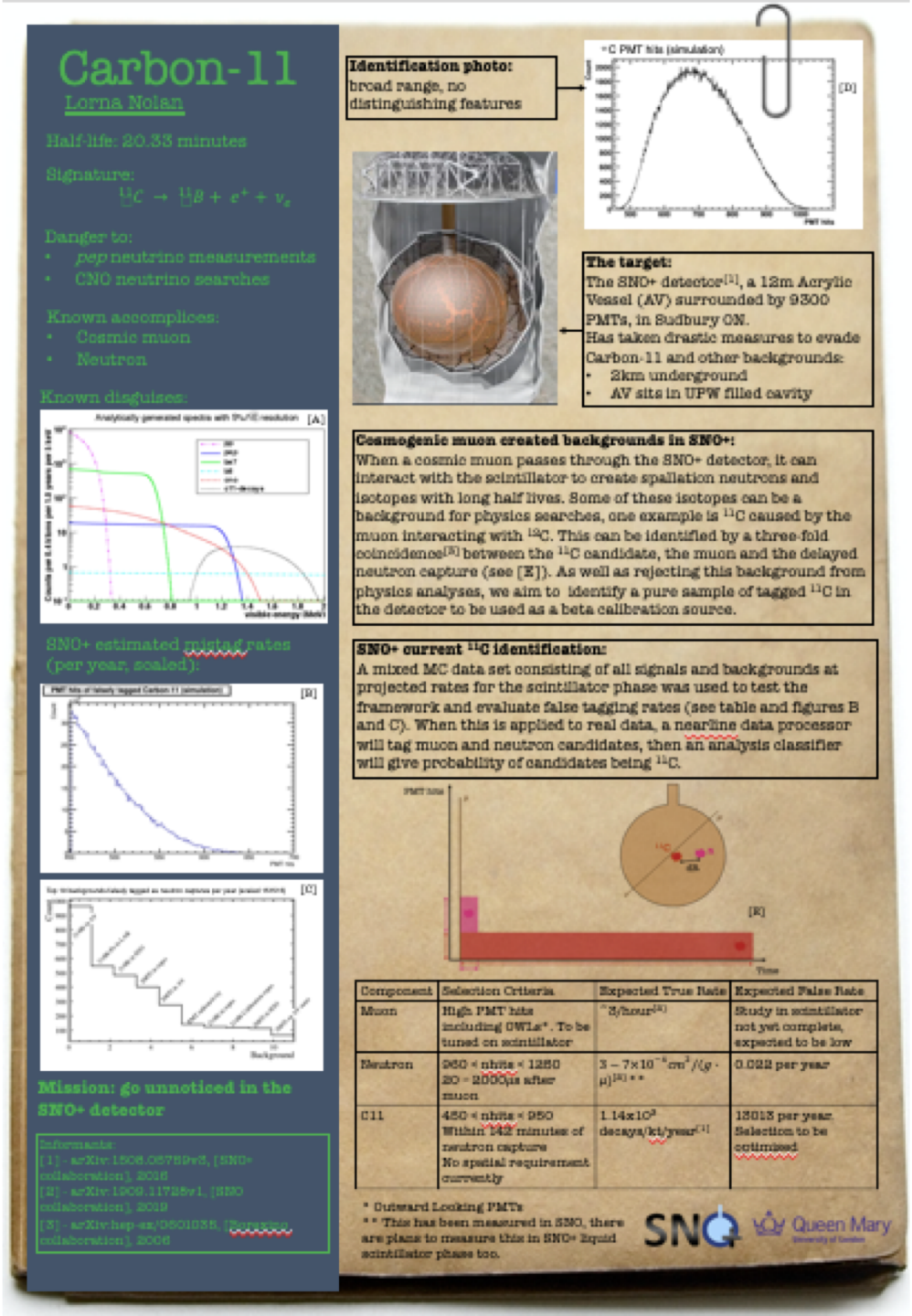
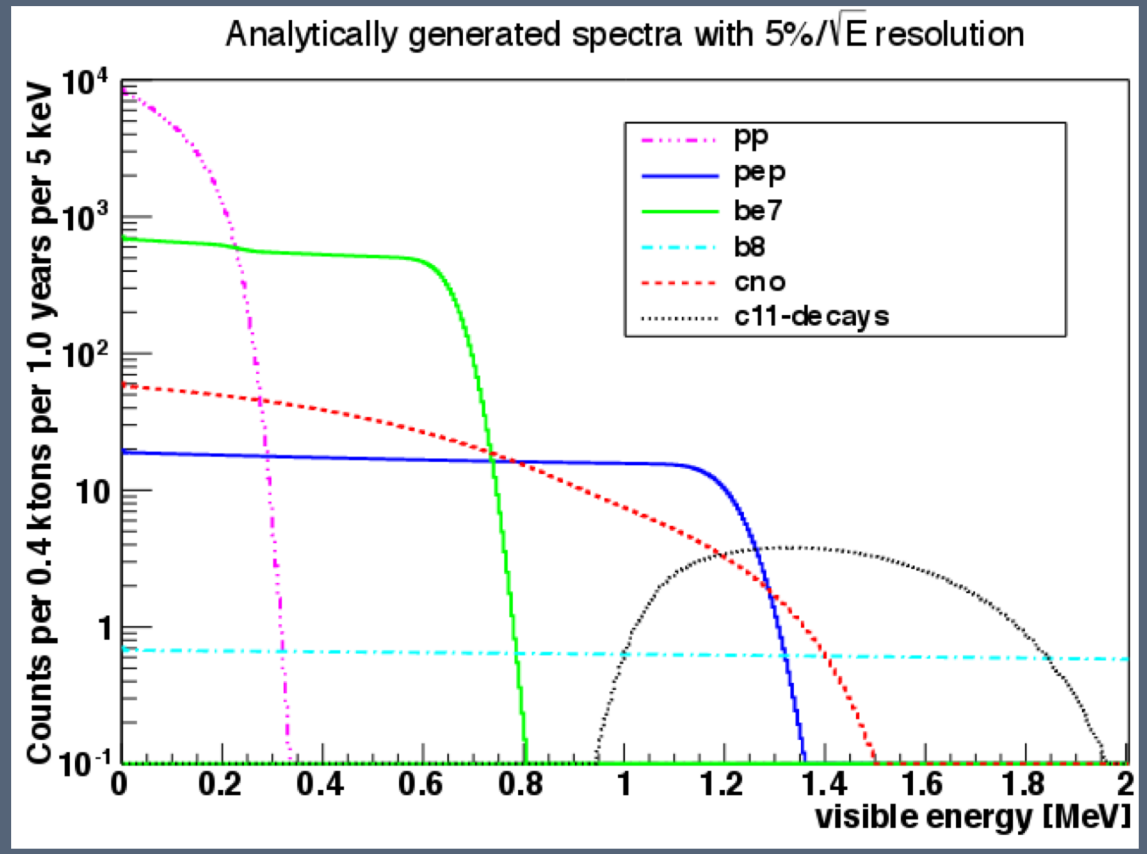
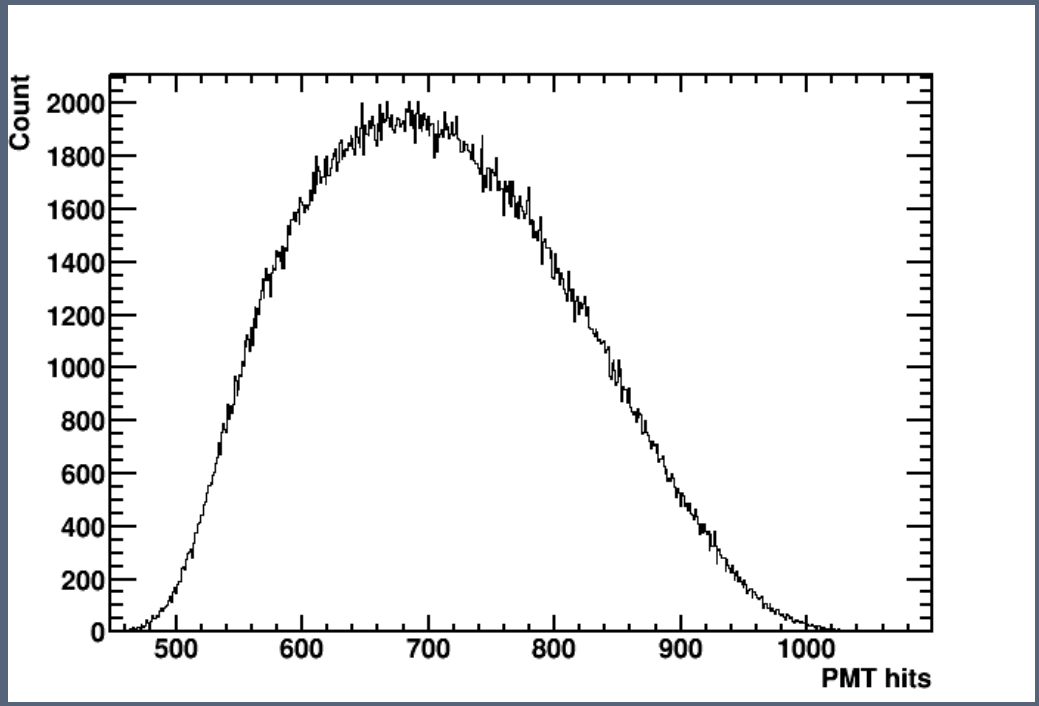
Poster: Cosmic Muon Induced Backgrounds in SNO+



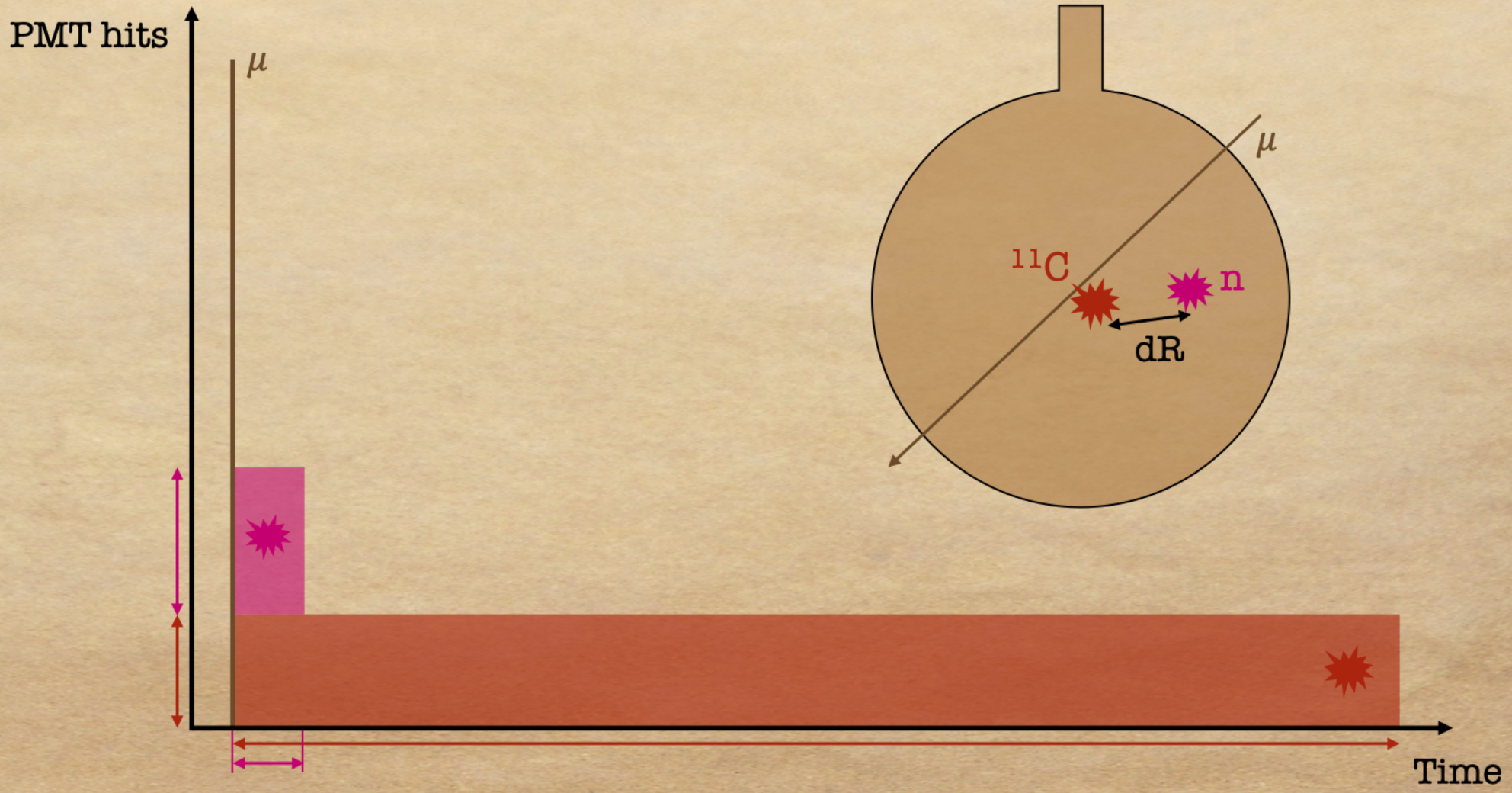
Carbon-11



- Half-life: 20.3 minutes
- Problematic for: *pep* neutrino measurements and CNO neutrino searches
- Caused by a cosmic muon interacting with a ^{12}C, knocking off a neutron



Three-fold tagging



Current Status (from MC)

Component	**Selection Criteria**	**Expected True Rate**	**Expected False Rate**
Muon	High PMT hits including OWLs. To be tuned on scintillator	~3/hour[2]	Study in scintillator not yet complete, expected to be low
Neutron	960 < nhits < 1250 20 – 2000μs from muon	$3 - 7\times10^{-4} cm^2/(g \cdot \mu)$[2] *	0.022 per year
C11	450 < nhits < 950 Within 142 minutes of neutron capture No spatial requirement currently	$1.14\text{x}10^3$ decays/kt/year[1]	13013 per year. Tuning selection criteria to reduce this