Steel Vessel Background Simulation

F. Nuti*

*The University of Melbourne

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Picture by M. Volpi

THE UNIVERSITY OF MELBOURNE

STAWELL UNDERGROUND PHYSICS LAB

SABRE

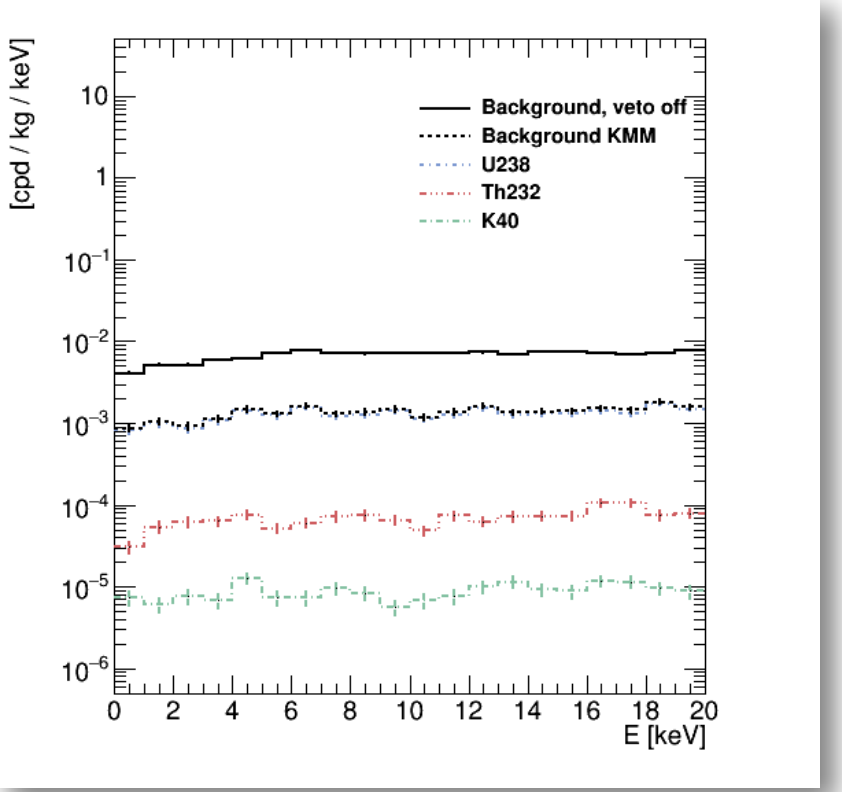
CONTAMINATION

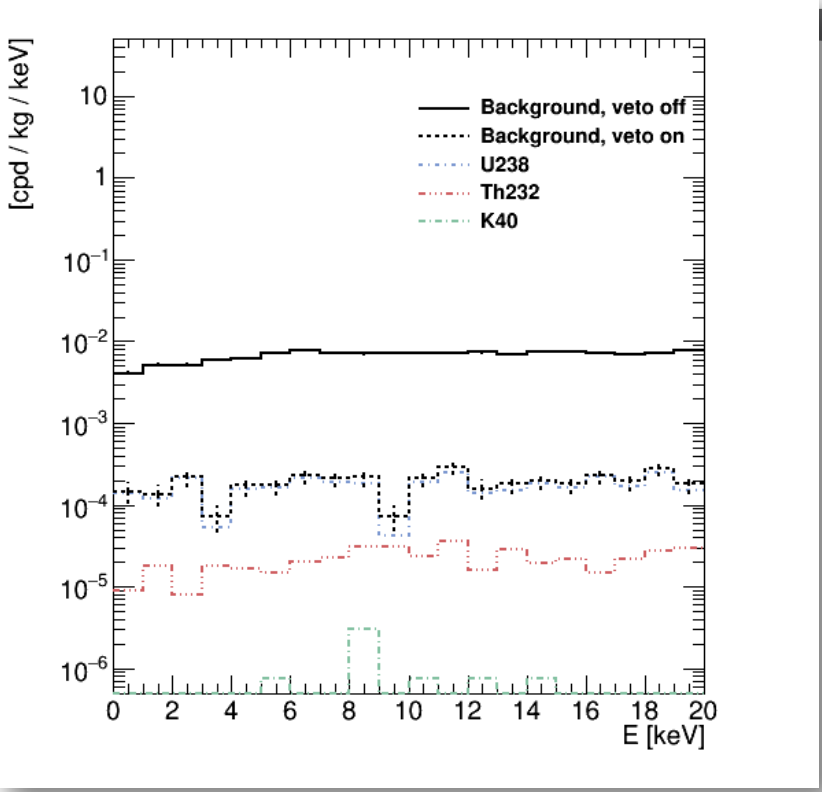
https://phy-sabreweb.princeton.edu/sabrewiki/index.php/Veto_North_-_Information_on_Raw_Materials

GDMS measurement of Steel Samples									
Lot Number	Thickness	U		Th		K		Pb	Comments
	inch	ppb	mBq/kg	ppb	mBq/kg	ppb	mBq/kg	ppb	default units if not specified
S536	3/8	0.3	3.7	<0.1	<0.4	4	0.12	10	

Simulated Isotopes	Radioactivity	Events generated
40K	0.124 mBq/kg	3600000000
Pb214 (238U)	3.73 mBq/kg	3600000000
Bi214 (238U)	3.73 mBq/kg	2700000000
Bi210 (238U)	3.73 mBq/kg	900000000
Ac228 (232Th)	0.407 mBq/kg	2700000000
Pb212 (232Th)	0.407 mBq/kg	900000000
Bi212 (232Th)	0.407 mBq/kg	900000000
Tl208 (232Th)	0.146 mBq/kg	2700000000

Expected Background





Potassium Mode:

energy deposition in Liquid Scintillator in [1280,1640] keV

Background in [2,4] KeV:

(2.27 ± 0.18)e-03 cpd/kg

DM detection mode:

energy deposition in Liquid Scintillator <100 keV

Background in [2,6] KeV:

(7.27 ± 0.97)e-04 cpd/kg

Backup