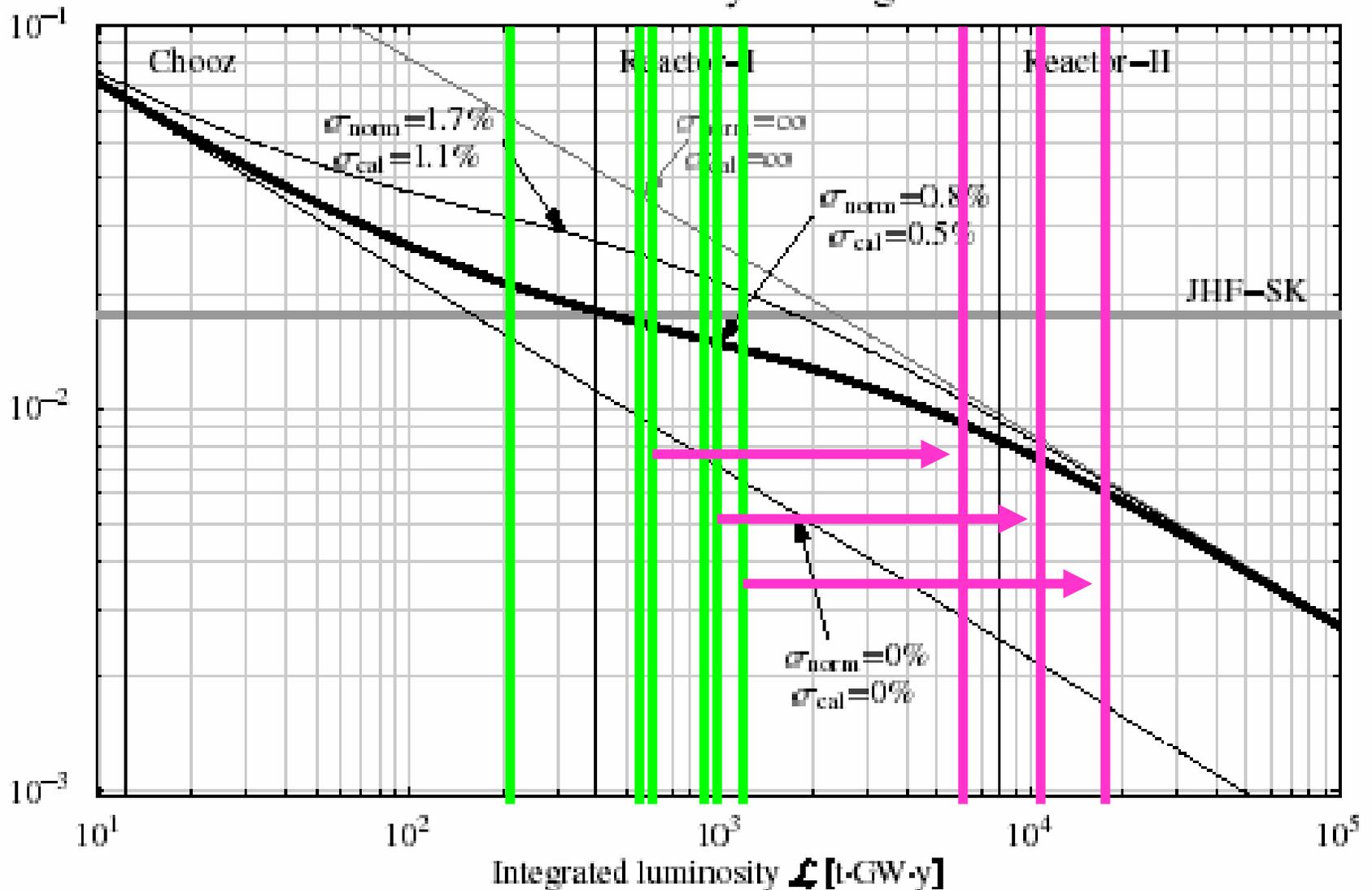
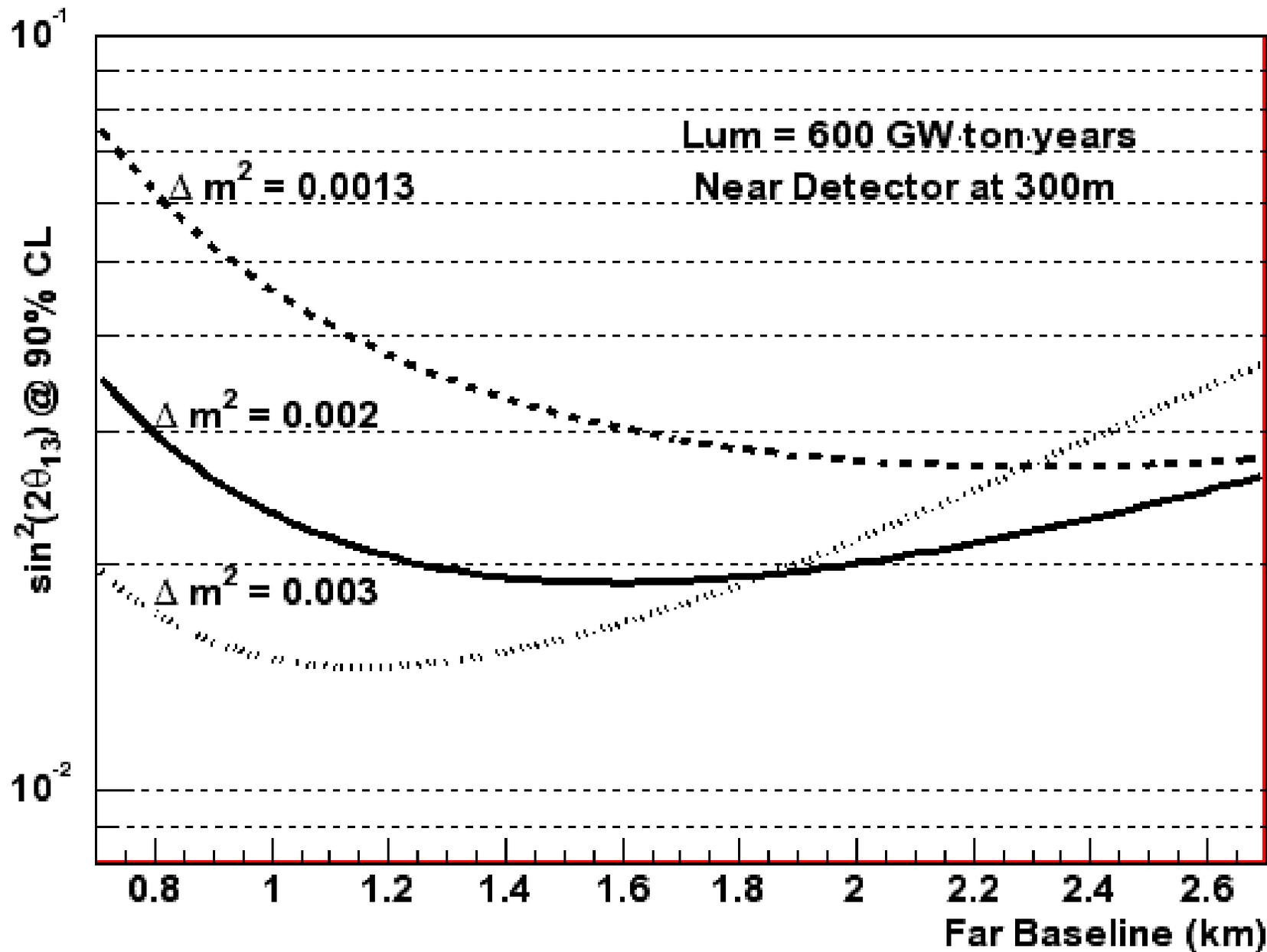
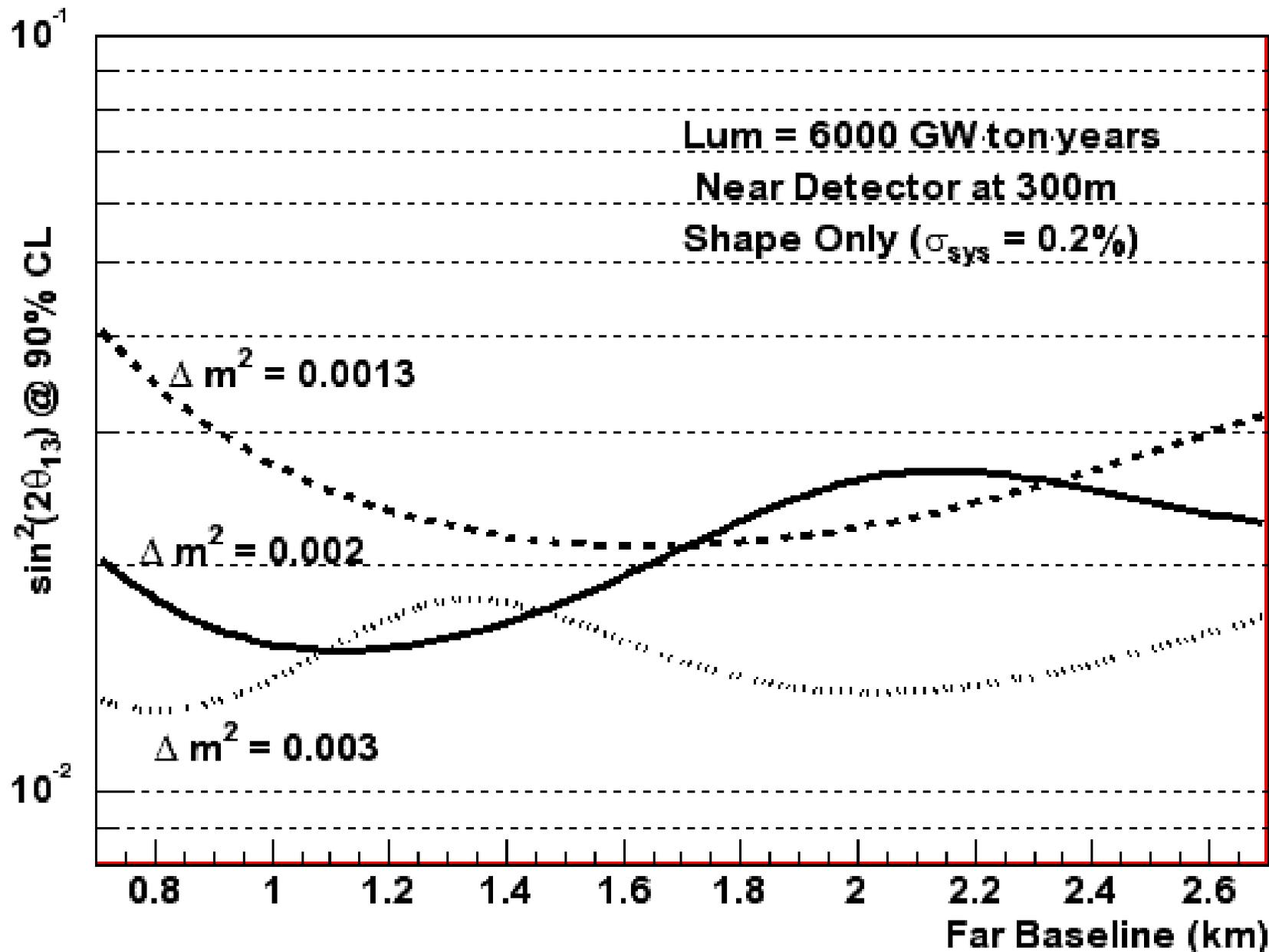


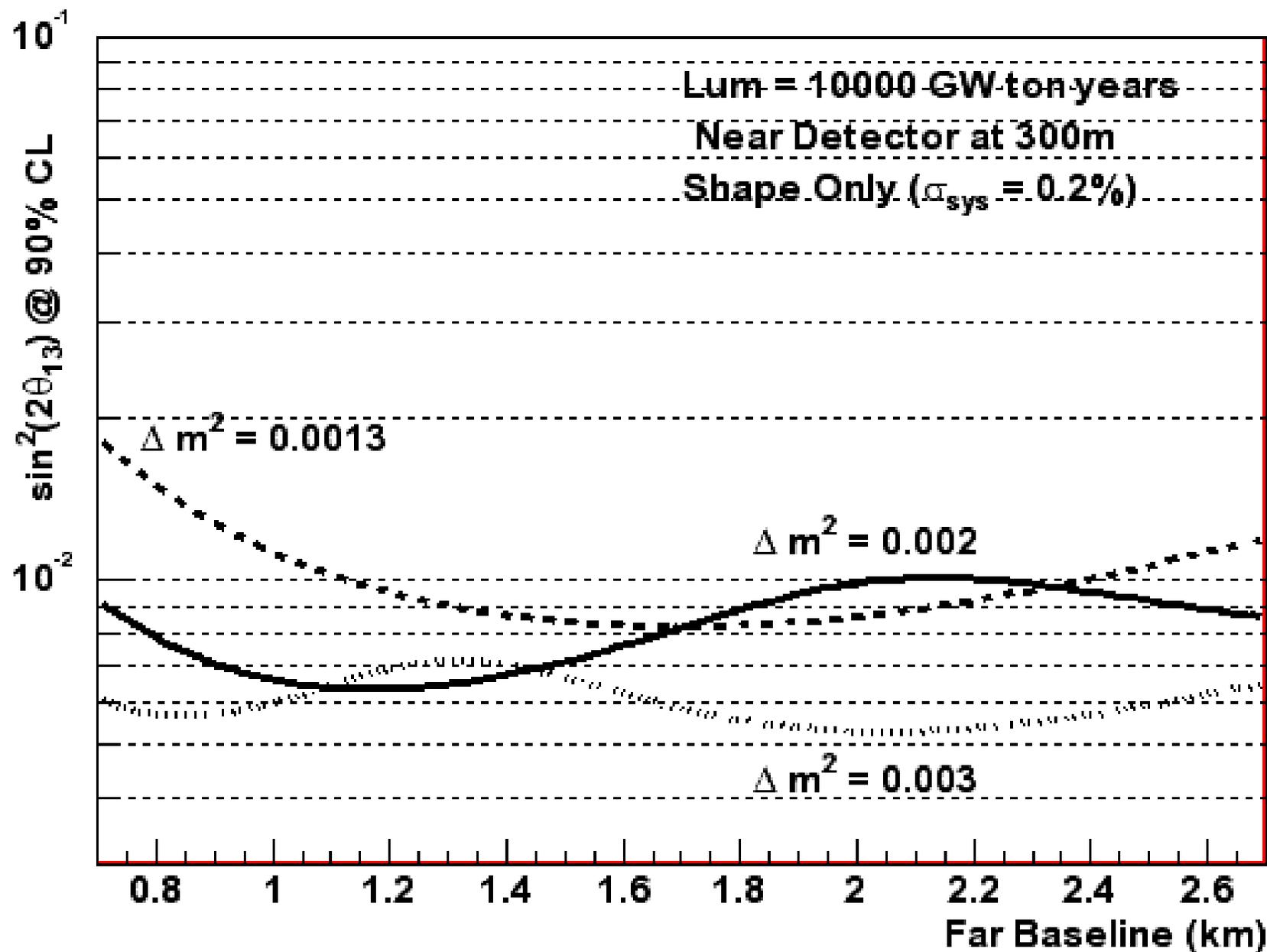
# Experimental Luminosity

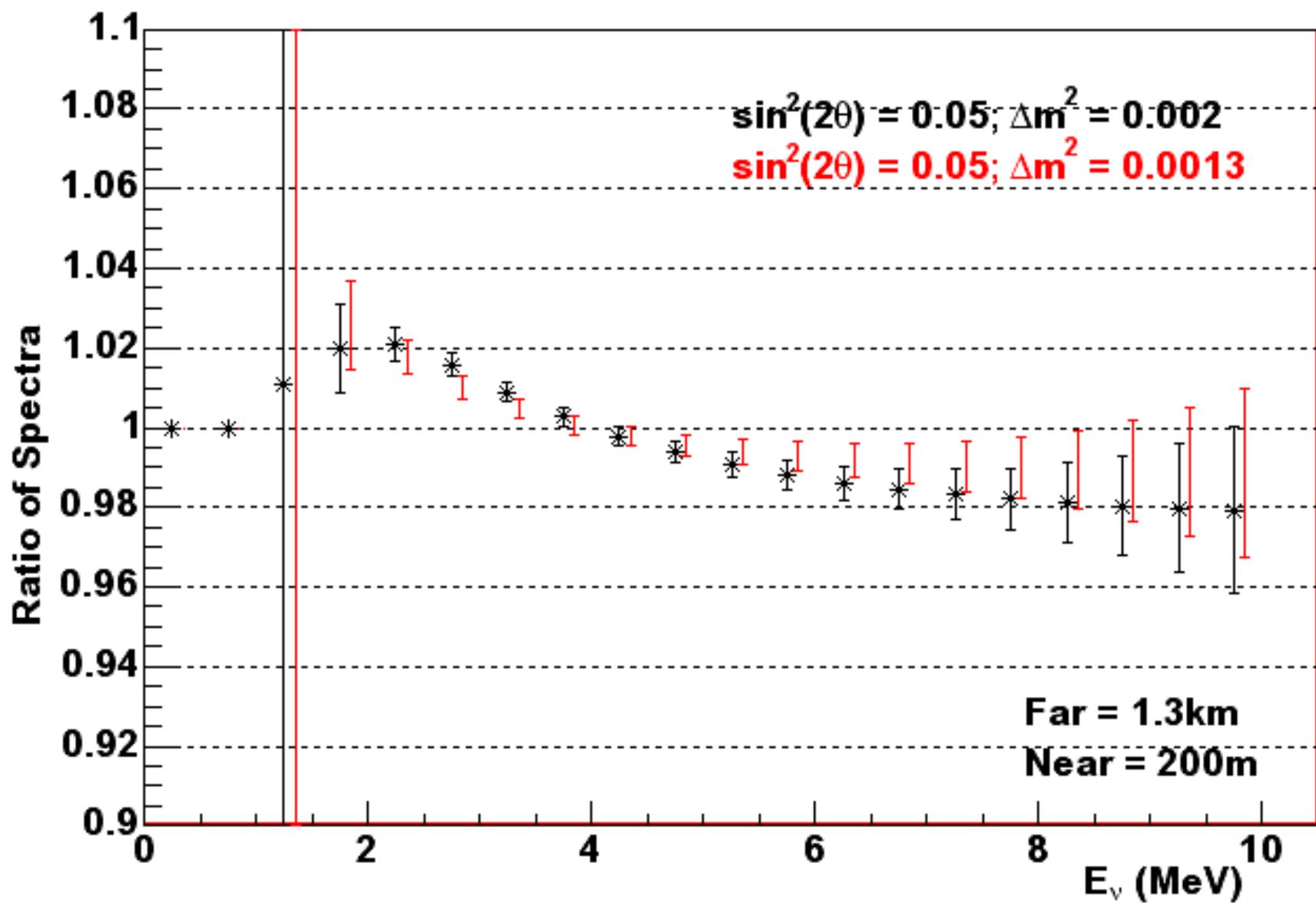
## Luminosity Scaling



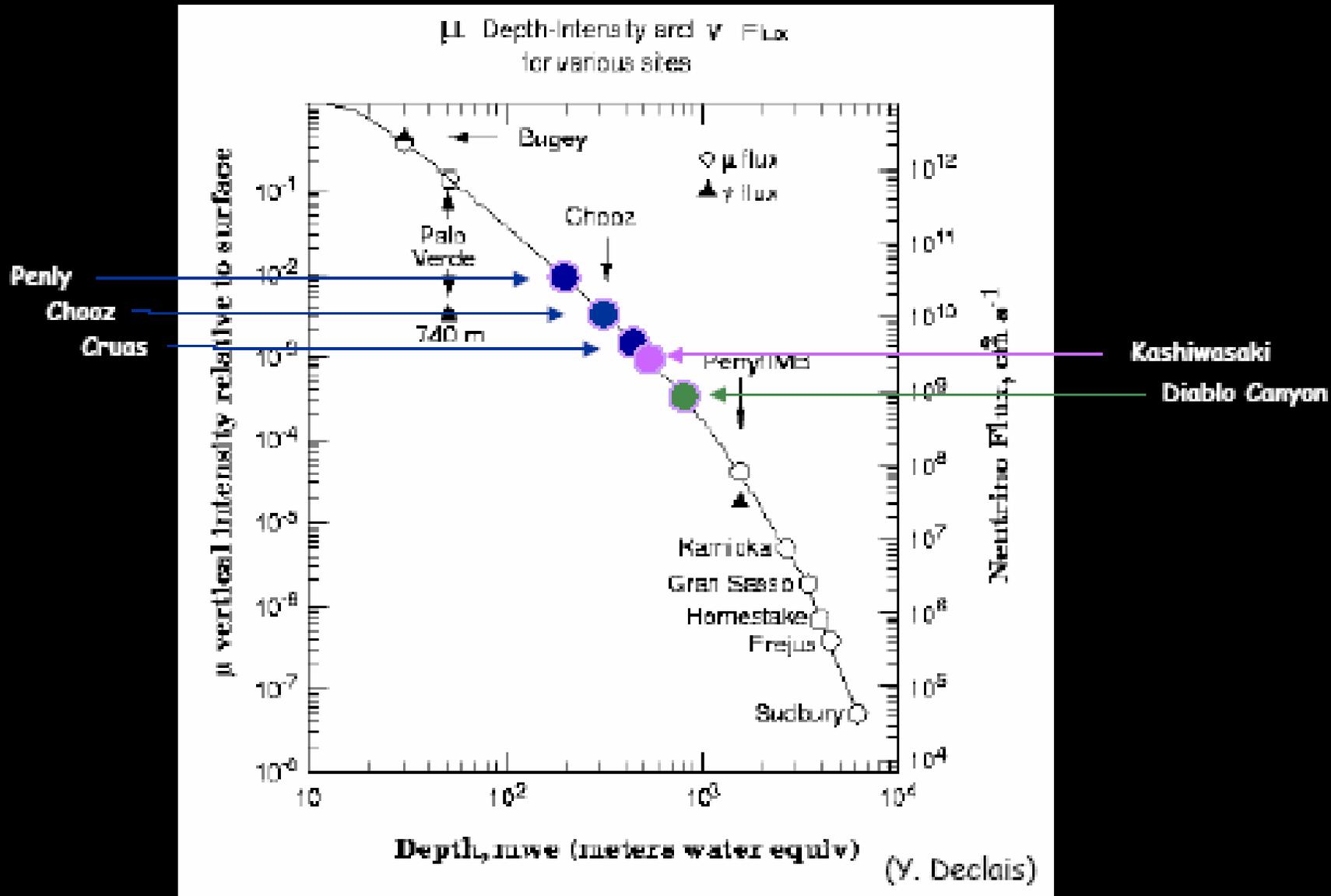








# Site depths



# Muon induced production of radioactive isotope

-Background: Production of radioactive nuclei on  $^{12}\text{C}$  in the scintillator

-NA54: Isotope production on  $^{12}\text{C}$  target @SPS/CERN,  $\mu$  beam @100/190 GeV  $\rightarrow \sigma(E) \propto E^{0.73}$  (T. Hagner et. al.)

	Isotope	$T_{1/2}$	$E_{\text{max}}$ (MeV)	Rate (day $^{-1}$ ) 15 m (37.5 mwe)	Rate (day $^{-1}$ ) 20 m (50 mwe)	Rate (day $^{-1}$ ) 25 (62.5 mwe)	Type
$\beta^-$	$^{12}\text{B}$	0.02 s	13.4	-	-	-	Uncorrelated
	$^{11}\text{Be}$	13.80 s	11.5	< 30	< 23	< 18	Uncorrelated
	$^{11}\text{Li}$	0.09 s	20.8	-	-	-	Correlated
	$^9\text{Li} +$ $^8\text{He}$	0.18 s	13.6	$27 \pm 5$	$21 \pm 4$	$16 \pm 3$	Correlated
		0.12 s	10.6				Correlated
	$^8\text{Li}$	0.84 s	16.0	$51 \pm 18$	$39 \pm 14$	$31 \pm 11$	Uncorrelated
$^6\text{He}$	0.81 s	3.5	$201 \pm 20$	$155 \pm 16$	$124 \pm 12$	Uncorrelated	
$\beta^+$ $\bar{\nu}\text{EC}$	$^{14}\text{C}$	20.38 m	0.96	$11369 \pm 729$	$8765 \pm 562$	$6989 \pm 448$	Uncorrelated
	$^{10}\text{C}$	19.30 s	1.9	$1450 \pm 183$	$1118 \pm 141$	$891 \pm 113$	Uncorrelated
	$^9\text{C}$	0.13 s	16.0	$61 \pm 19$	$47 \pm 15$	$37 \pm 12$	Uncorrelated
	$^8\text{B}$	0.77 s	13.7	$90 \pm 18$	$69 \pm 14$	$55 \pm 11$	Uncorrelated
	$^7\text{Be}$	53.3 d	0.48	$2889 \pm 289$	$2228 \pm 223$	$1776 \pm 178$	Uncorrelated

\* Rates are given for the CHOOZ 10 t PXE case ( $\text{C}_{16}\text{H}_{18}$ )

\*  $5.15 \cdot 10^{29}$  free protons

\* PXE scintillator :  $d = 0.99 \rightarrow 10$  tons detector

\* PXE scintillator :  $\text{C}_{16}\text{H}_{18} \rightarrow 4.58 \cdot 10^{29}$   $^{12}\text{C}$

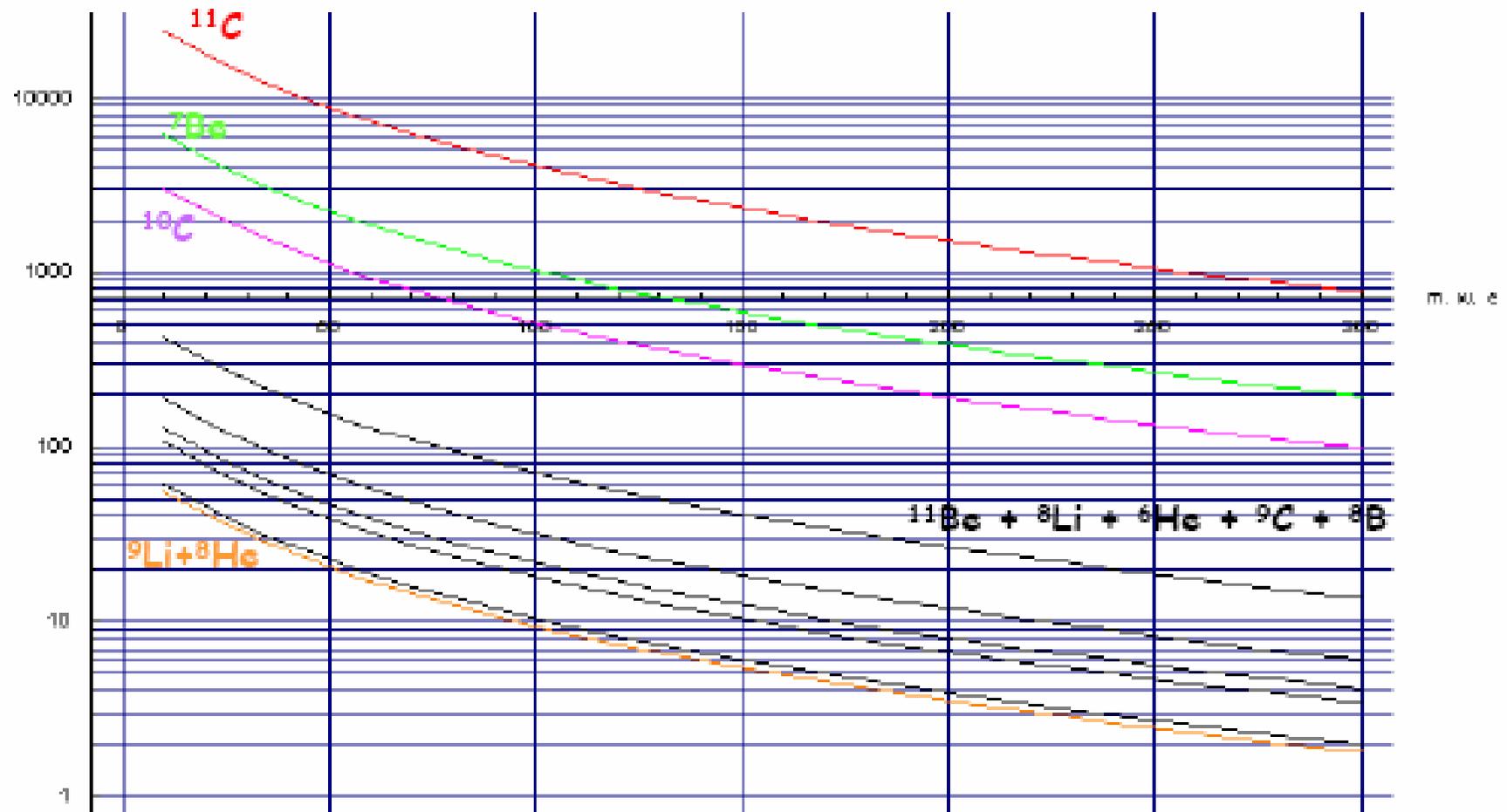
\* Depth : 2 hypotheses considered: 1) 37.5 mwe 2) 50 mwe 3) 62.5 mwe

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events / day / 10 tons PXE





Far Site

Near Site

MORRO DO FRADE

Morro do Urubu

IBGE-91894

Near Site

Near Site

