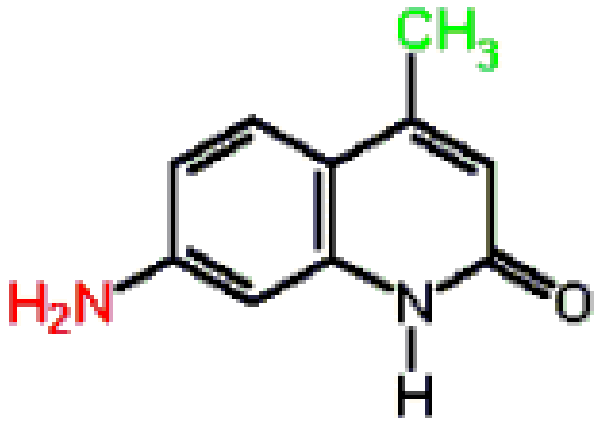
ECG Meeting
Nov 12, 2003
Carleton University

THE WAVELENGTH SHIFTERS IN SNO A Quick Update on:

-SNOMAN
-WLS Telescope
-MC MSW plane



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Two Candidates and SNOMAN

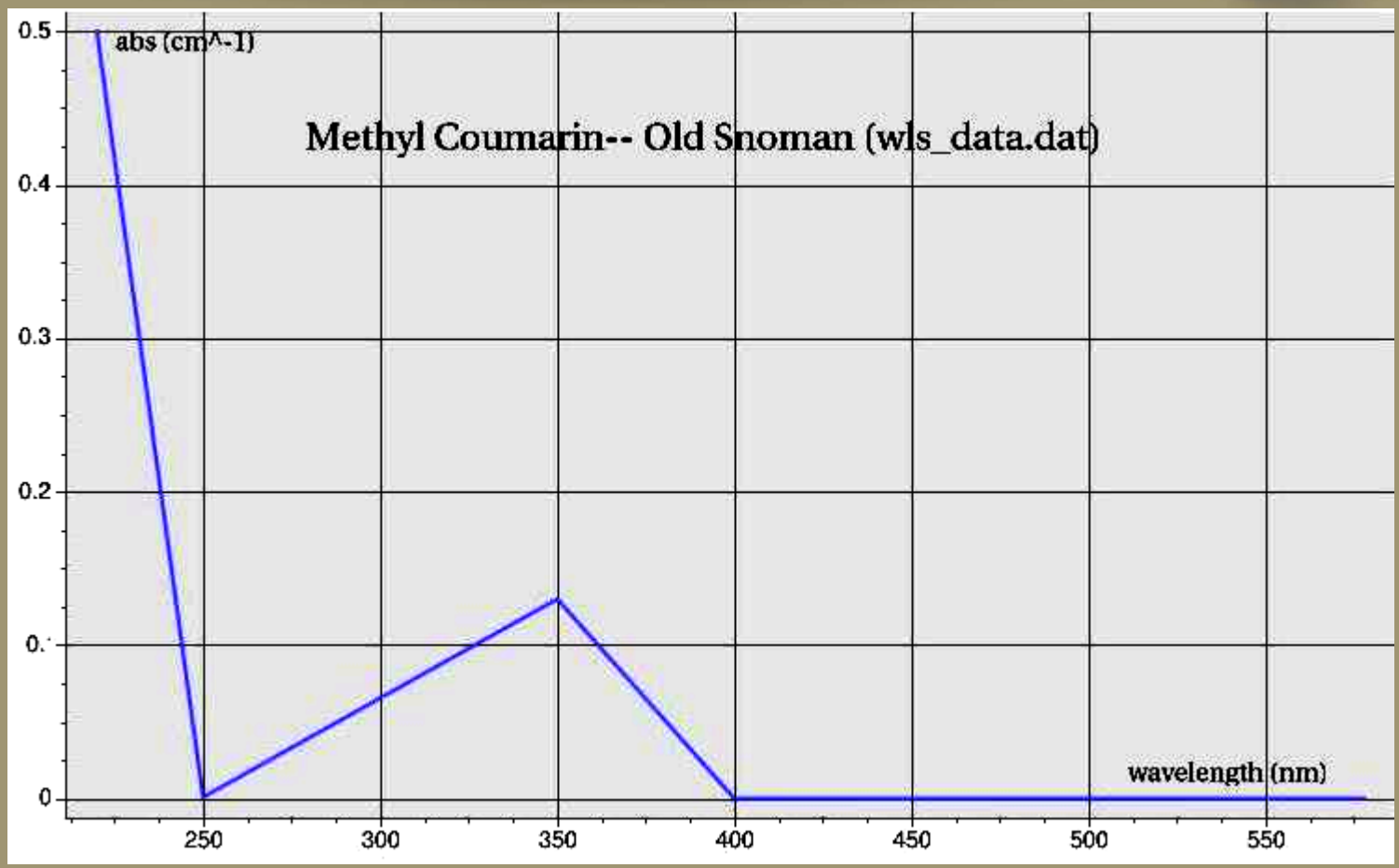
Two Candidates – Two Title Files

Carbostyril 124
Alexafluor 350

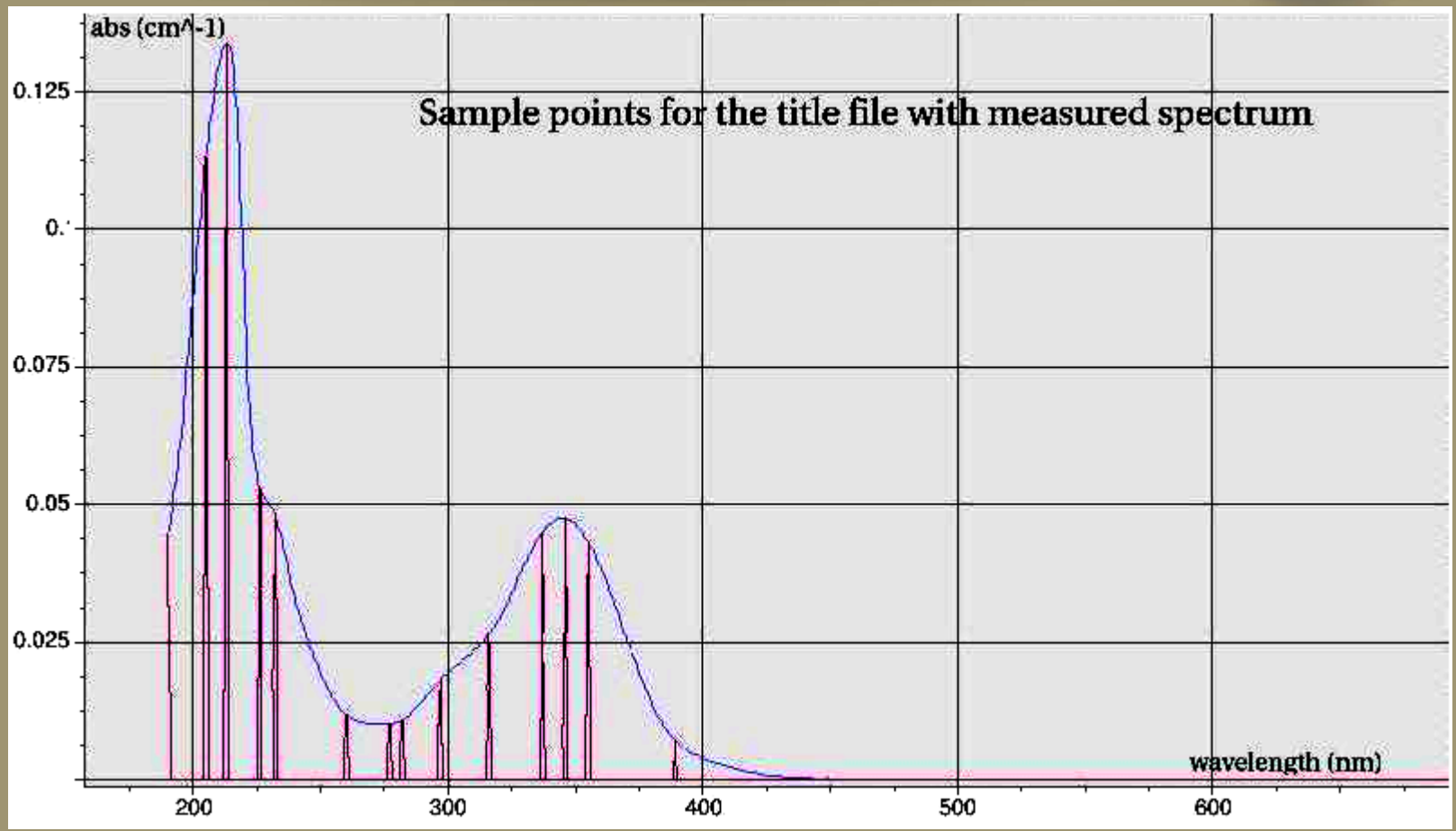
*Title files are available on my website

Before being official:
-Measurement of the decay time (Nov 19 by Xin)
-Measurement of the reemission probability (Nov 14

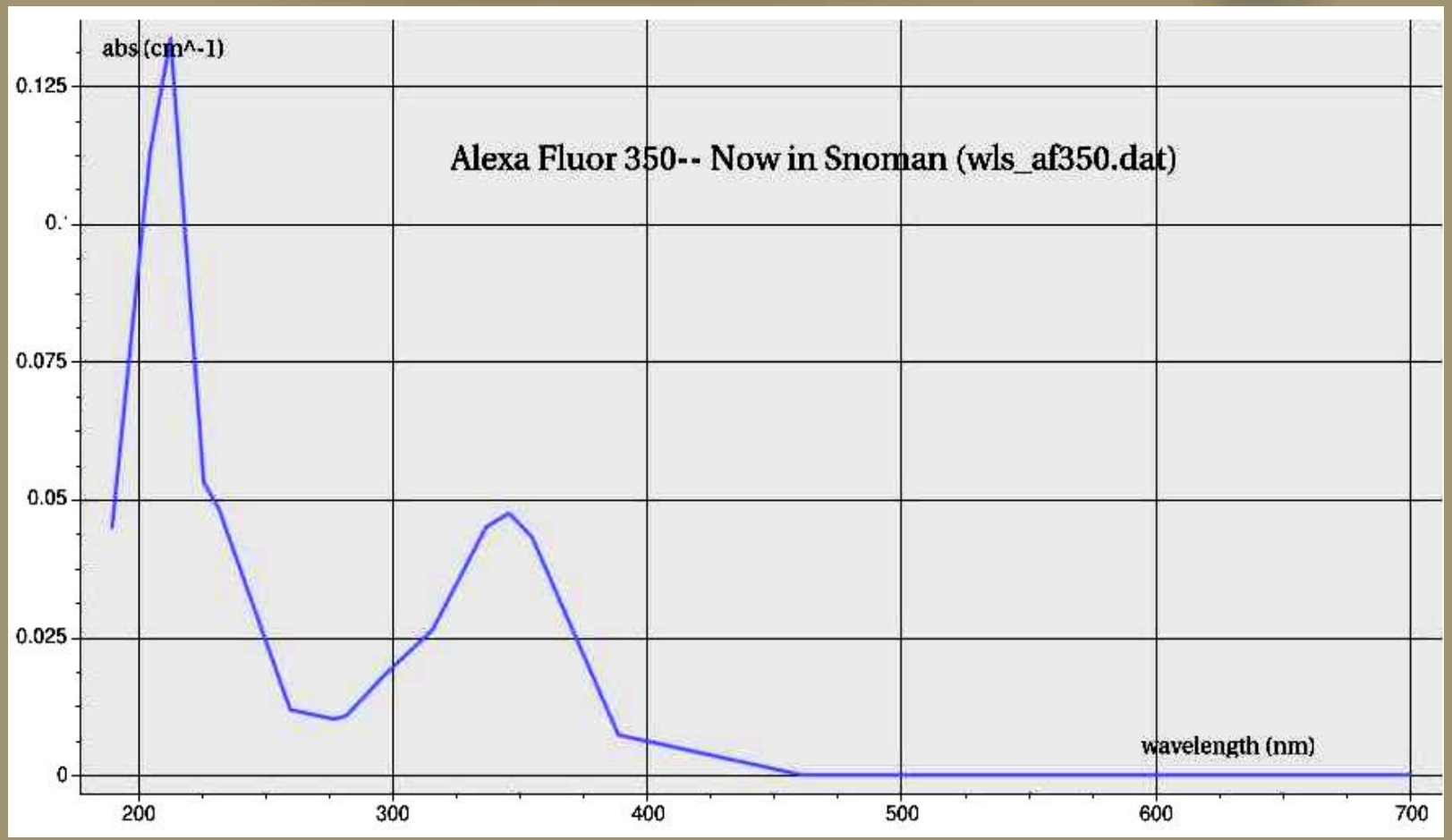
Old Titlefile



Measured Spectrum



New Titlefile



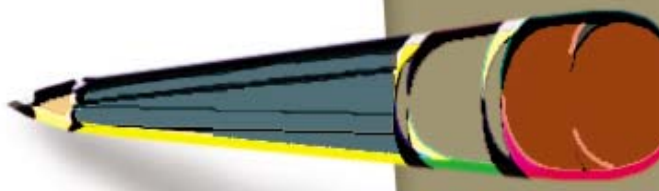
MC RESULTS!!!

	Mean Nhit for a 10 MeV electron
Pure D2O (No [illegible])	79
Old Data	148
Alexa Fluor	107
Carbostyril	199

*Based on 10000 x 10 MeV e- generated isotropically in the center of the detector with a WLS concentration of 1ppm.

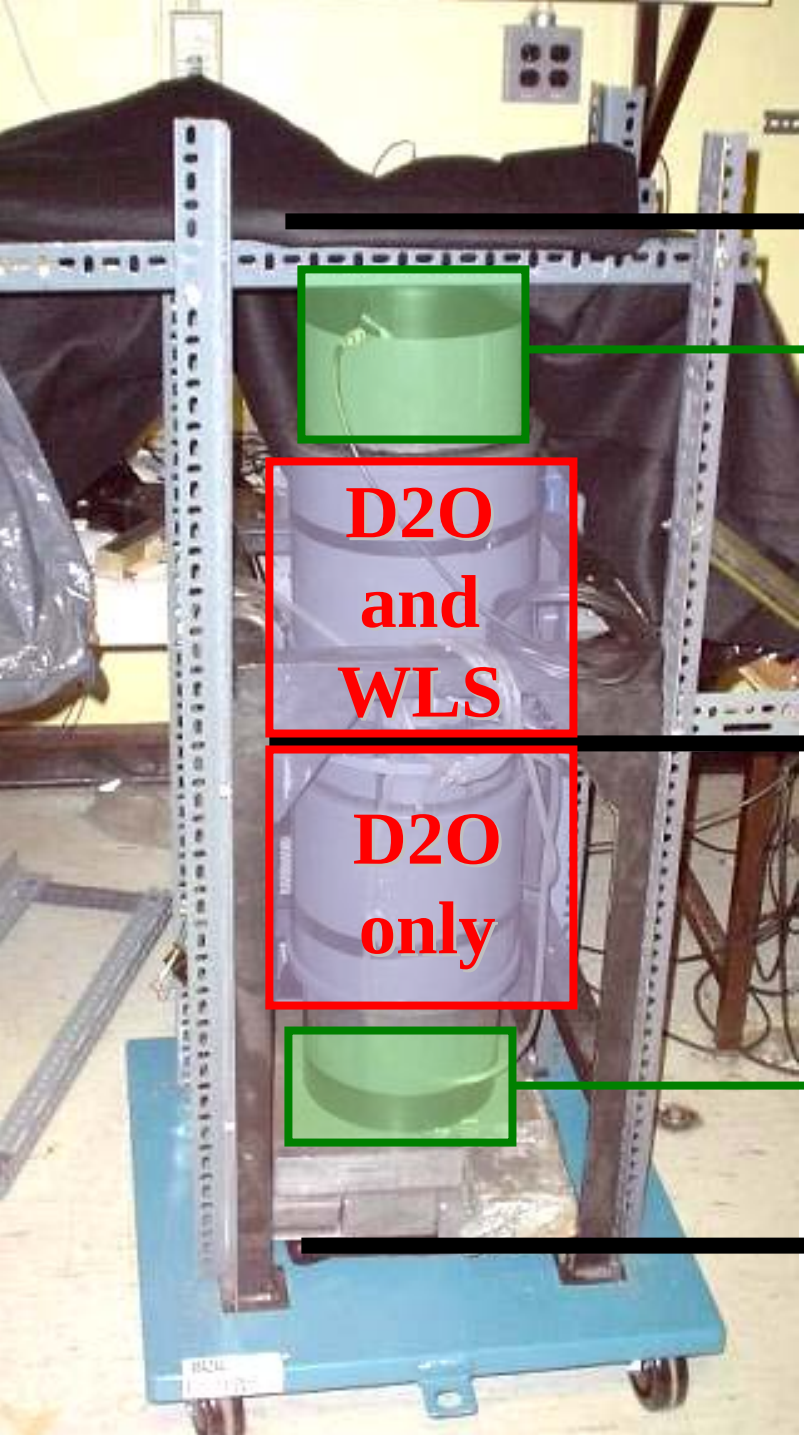
Cosmic Ray WLS Telescope

Cosmic Ray Telescope



- Used to measure properties of WLS
- Will help to determine the right concentration to use in SNO
- Needs some adjustments to start taking data

WLS Telescope -- Description



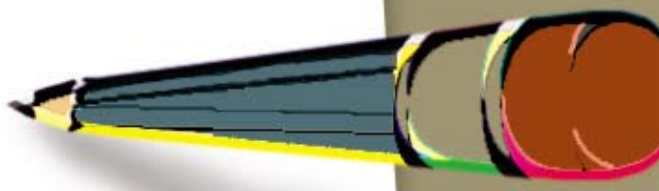
SNO PMT

Scintillator → Trigger

SNO PMT

MSW plane

With the help of G. Tesic



<u>ES + CC + NC + Low E BG</u>

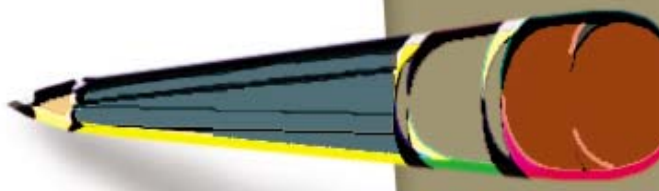
(WLS only but may be used with NCD)

-Boost the signal

Find threshold for the new candidates and fit for new MSW constraints. If WLS only is not meeting expectations (spectral distortions), use the second option.

MSW plane

With the help of G. Tesic

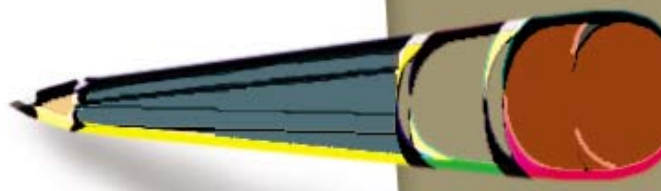


ES + CC (WLS+Poison)

-Kill all neutrons (no NC or internal background)

Both method should measure directly **spectrum distortions** by comparing undistorted and distorted spectrum (QPhysics) to exclude (?) the hypothesis of undistorted spectrum for the best solution (LMA) or any prefered solutions.

Conclusion



WLS are an interesting phase for SNO because:

-Increase the signal keeping external bg down
-Compensate for the aging of the detector
-Cancel the shadowing effect of the NCD
-Lower the energy threshold (sensitive to **spectral distortions**?)
-Not a major change of the detector (with/without NCD)
-Maybe: Increase the livetime by decreasing the calibration time since the detector will be more symmetric/uniform (added 20 minutes ago)