

Duality Water Analysis

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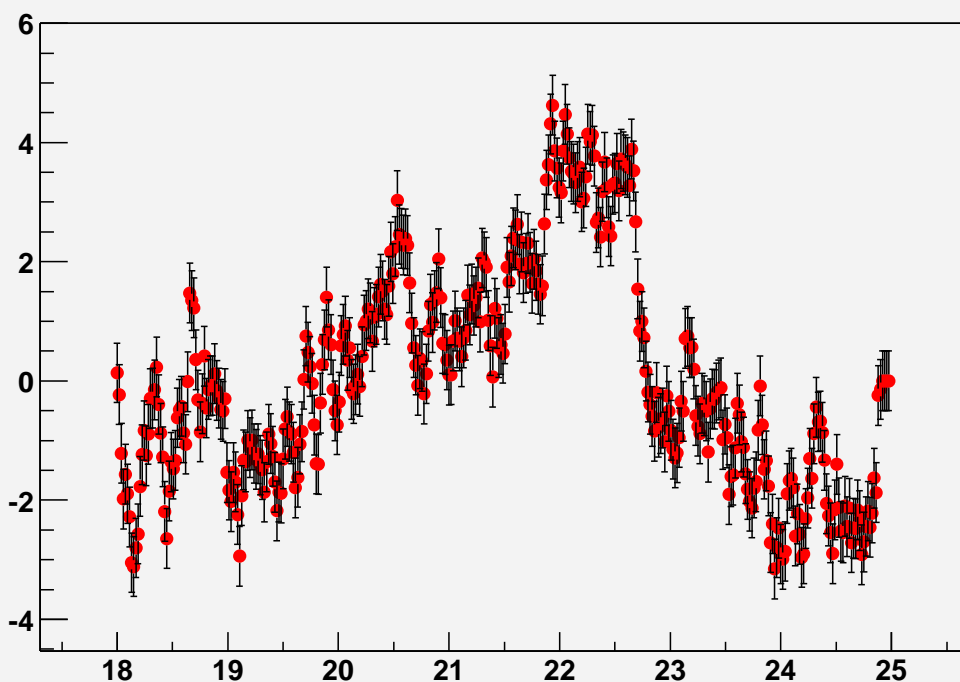
Pol. ^3He Collaboration Meeting

December 18th, 2003

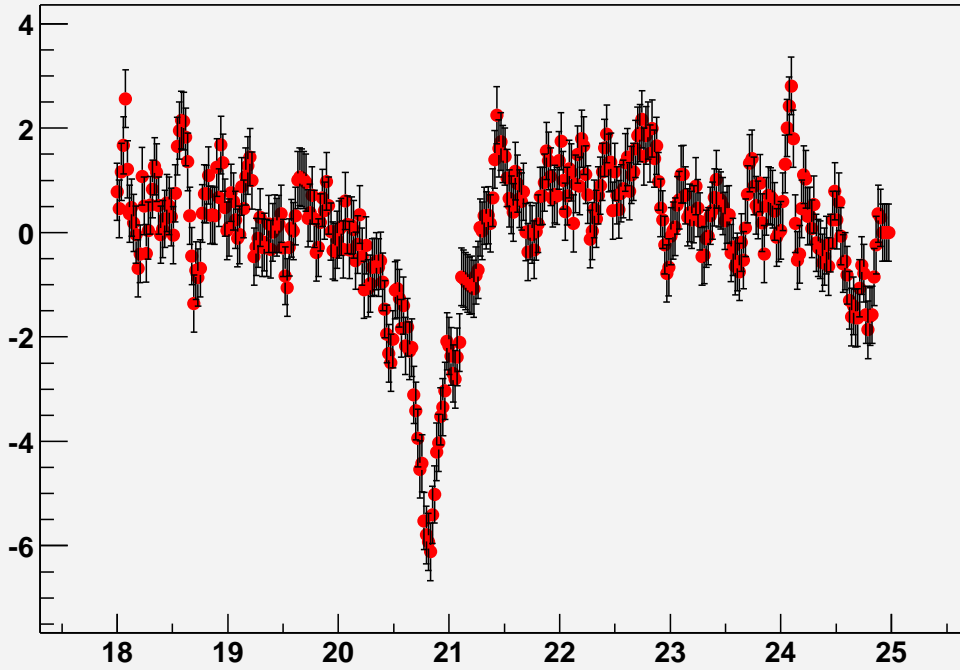
Calibration Summary

- Pre-experiment no good water calibrations
- Post-experiment 6 water calibrations
 - First three, target lifting motor caused significant background noise
 - Last three, lifting motor unplugged
 - For the last two, A- ϕ box was used
 - A- ϕ box caused distorted wings

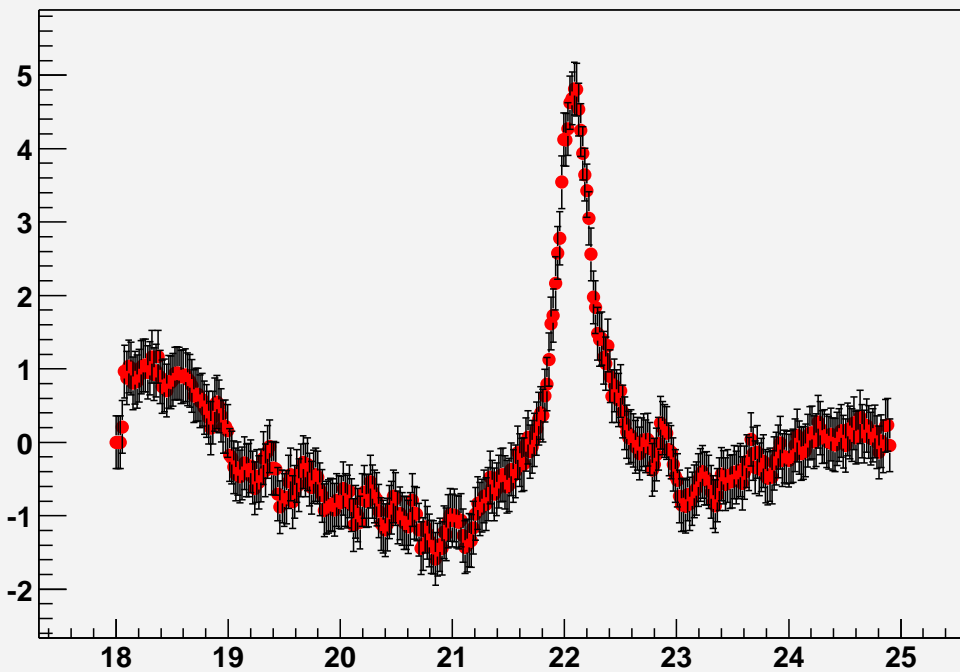
X Up sweep - 1st 16 Feb 2003 - 100x



X Down sweep - 1st 16 Feb 2003 - 100x



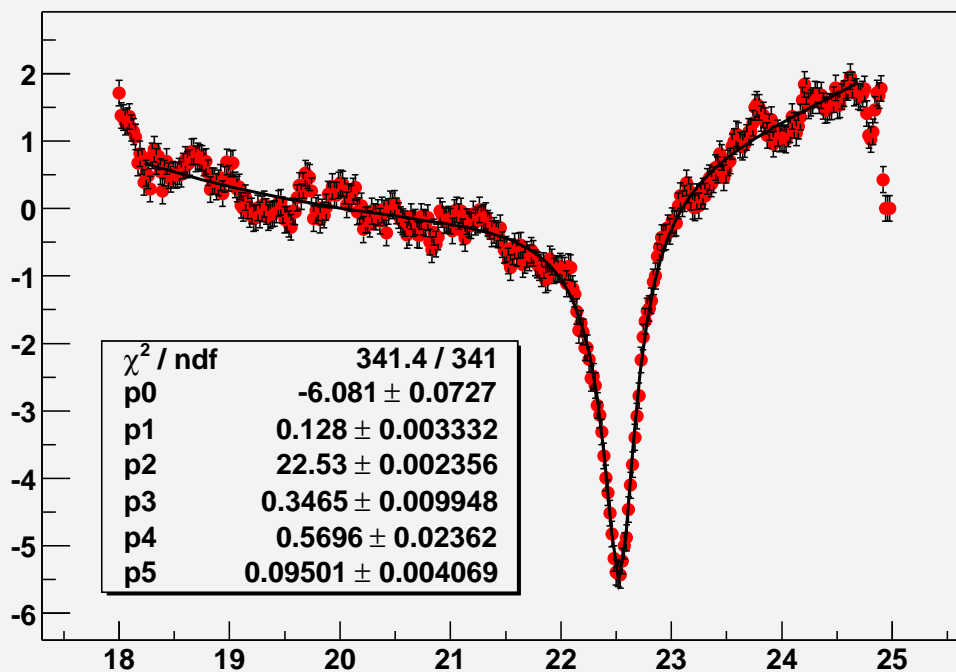
X Down sweep - 17 Feb 2003 - 100x 40cm (circuit)



Analysis Progress

- Began analysis using a linear background (some progress)
- Moved to quadratic background (more progress)
- Last three calibration understood (for the most part)
- More work required to understand errors and background
- Up sweeps probably lost from first three calibrations

X Up sweep - 1st 17 Feb 2003 - 100x



Understanding the Background

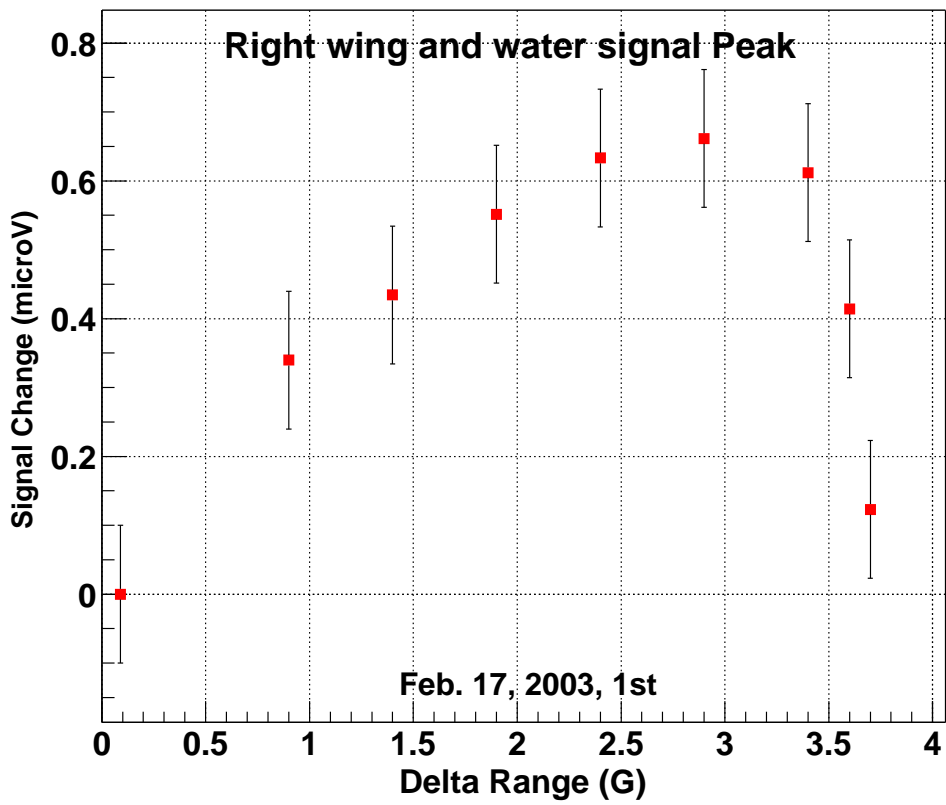
- $A-\phi$ box up sweeps fit well to linear and quadratic backgrounds (comparable)
- Down sweeps fit better with linear background
- Non- $A-\phi$ box up sweep is good, except a bump near the resonance
- Non- $A-\phi$ box down sweep fit well with both backgrounds
- $A-\phi$ down sweeps very sensitive to fit range

Analysis Results

Date	Sweep	Fit	Range (G)	Signal (μV)
02-16-03	Up	Linear	21.75-24.5	5.989
		Quad.	21.75-24.8	5.961
	Down	Linear	18.05-22.0	-6.997
			19.85-24.9	-7.085
		Quad.	18.05-24.8	-7.012
			20.05-24.9	-7.086
02-17-03-1	Up	Linear	18.05-24.9	-6.111
			21.5-24.8	-6.134
		Quad.	18.2-24.7	-6.081
02-17-03-2		Linear	18.1-24.9	-6.026
			21.6-24.8	-6.104
		Quad.	18.1-24.8	-6.011

Date	Sweep	Fit	Range (G)	Signal (μV)
02-17-03-1	Down	Linear	20.2-24.9	7.053
			18.05-21.2	7.026
			20.2-21.2	6.930
		Quad.	20.2-24.0	6.507
			18.2-21.3	6.831
			20.2-21.2	7.306
02-17-03-2	Down	Linear	20.2-24.8	6.827
			18.9-21.2	7.104
			20.2-21.2	6.946
		Quad.	20.2-24.8	6.737
			18.8-23.0	6.645
			18.9-21.2	6.916

Water Fit Range vs. Signal Change



Summary

Summary

- Uplugged lifting motor signals usable
- Need further analysis to understand the A- ϕ box background

Plan

- Finish background analysis
- See if signals with lifting motor plugged in are usable
- Finish error analysis
- Pol. ^3He signal analysis