

NN' ORNL-UT-UKY-LU Zoom meeting • June 09, 2026

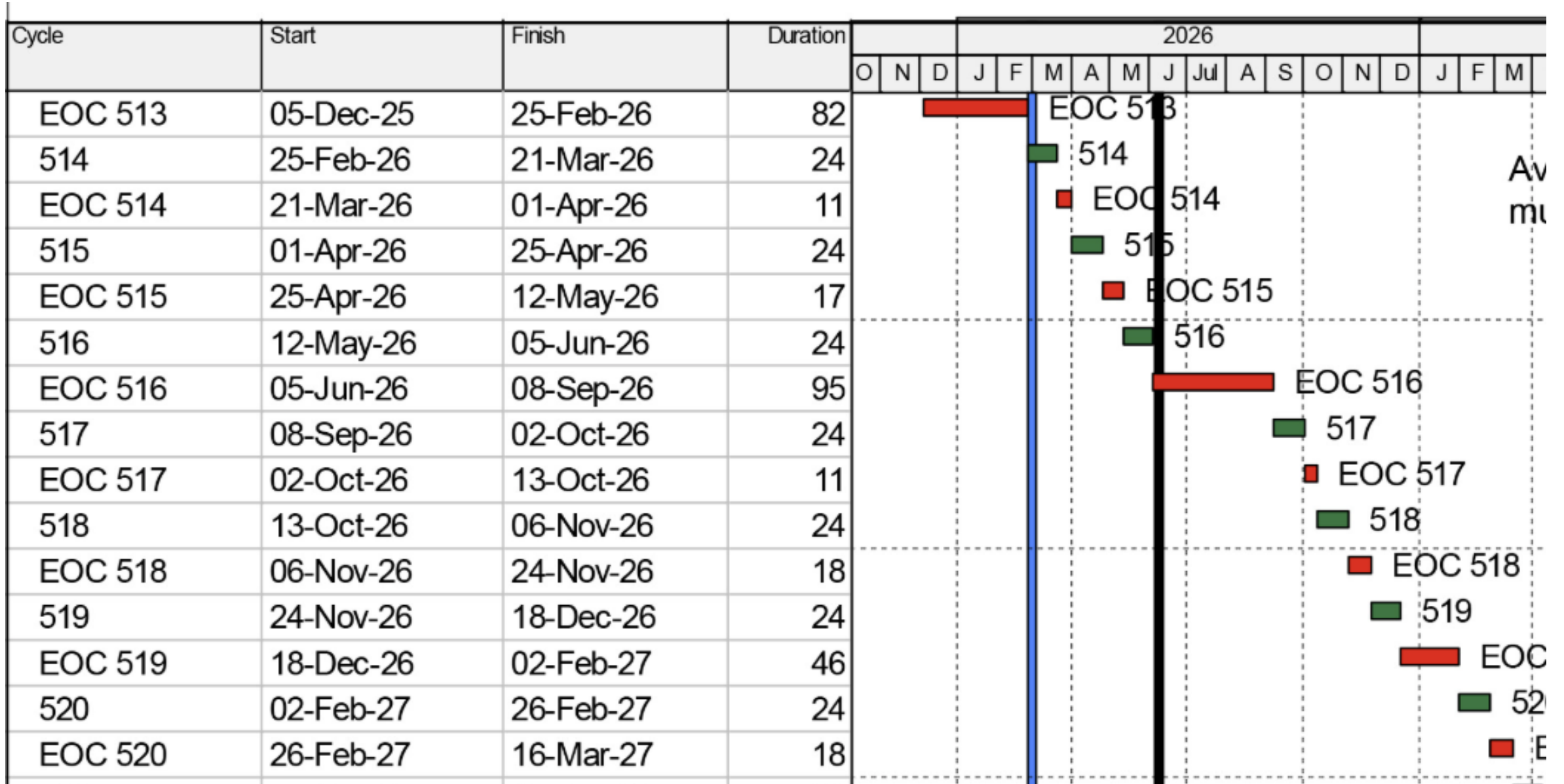
Agenda

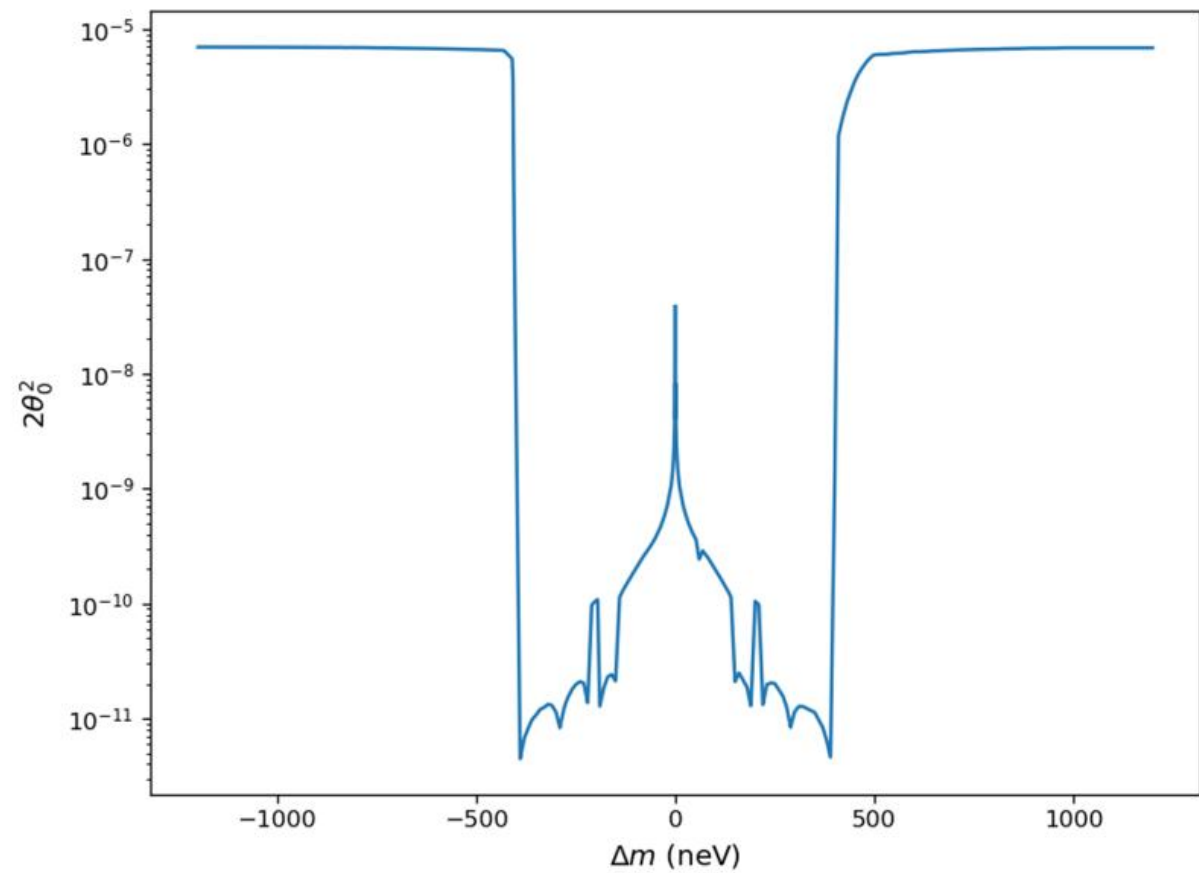
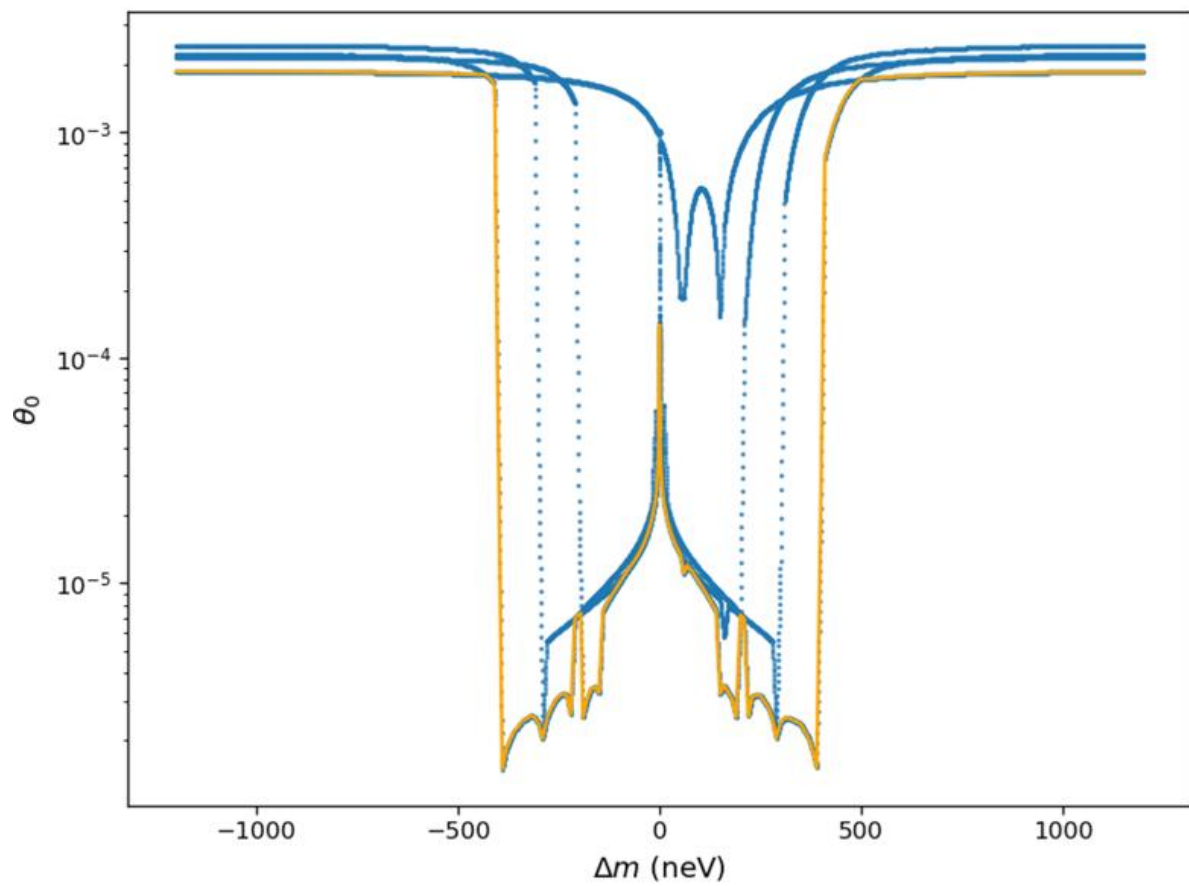
1. Yuri 10' Funding for starting construction
2. Yuri 10' Is starting nTMM-2 on Sept 8 feasible?
3. Yuri 10' Status of the PRD paper
4. Yuri for Alina 5' update on nTMM-1 analysis

Funding for starting construction

- materials for construction \$2,500
 - additional shielding layer \$2,500 for 1 magnet
\$5,000 for 2 magnets
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- ORNL resources
 - Proposal to UT Physics Department
 - Any other sources

Is starting nTMM-2 on Sept 8 feasible?





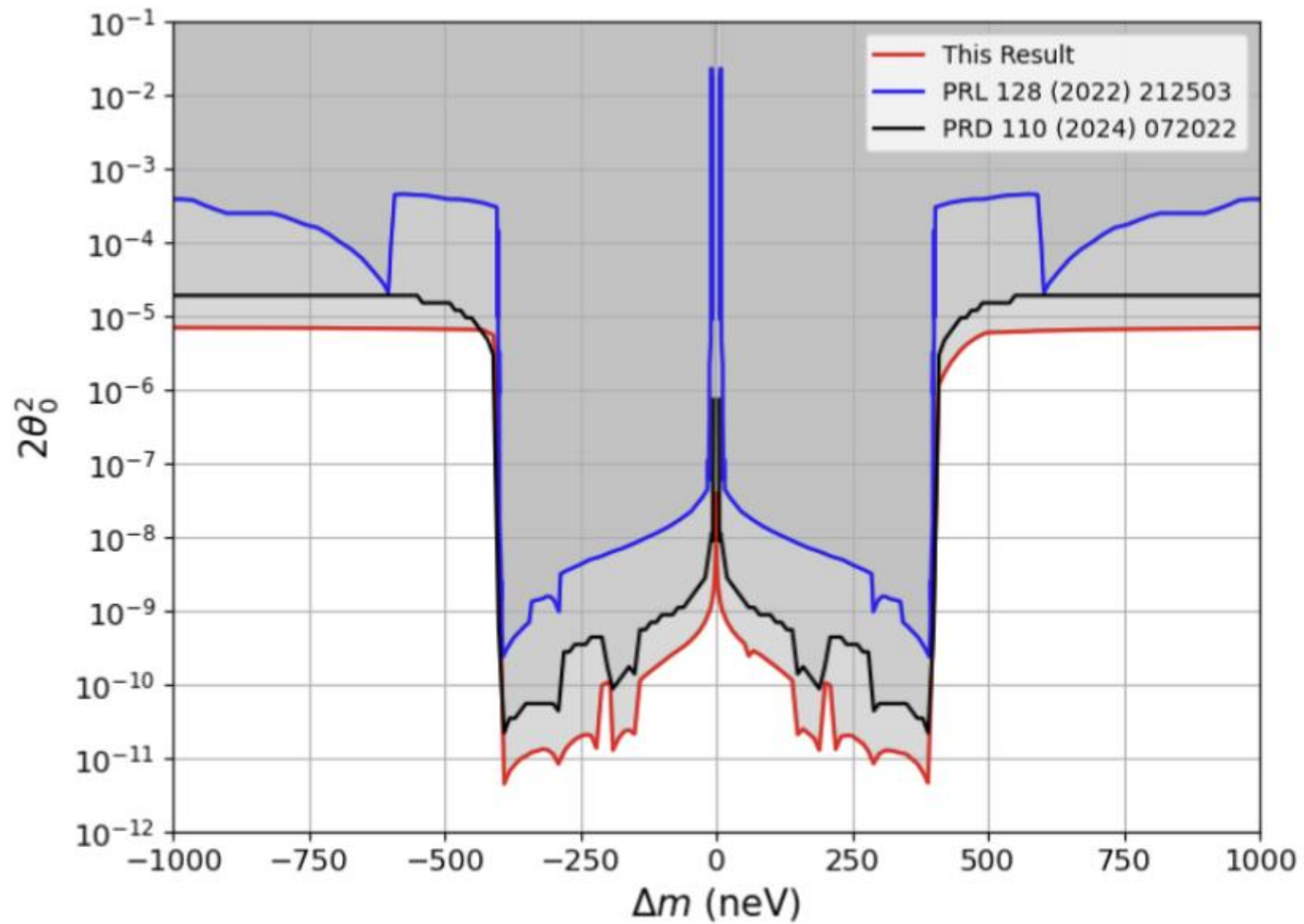


FIG. 9. Comparison of the probability limits of 2 SNS and current HFIR experiments (color online).

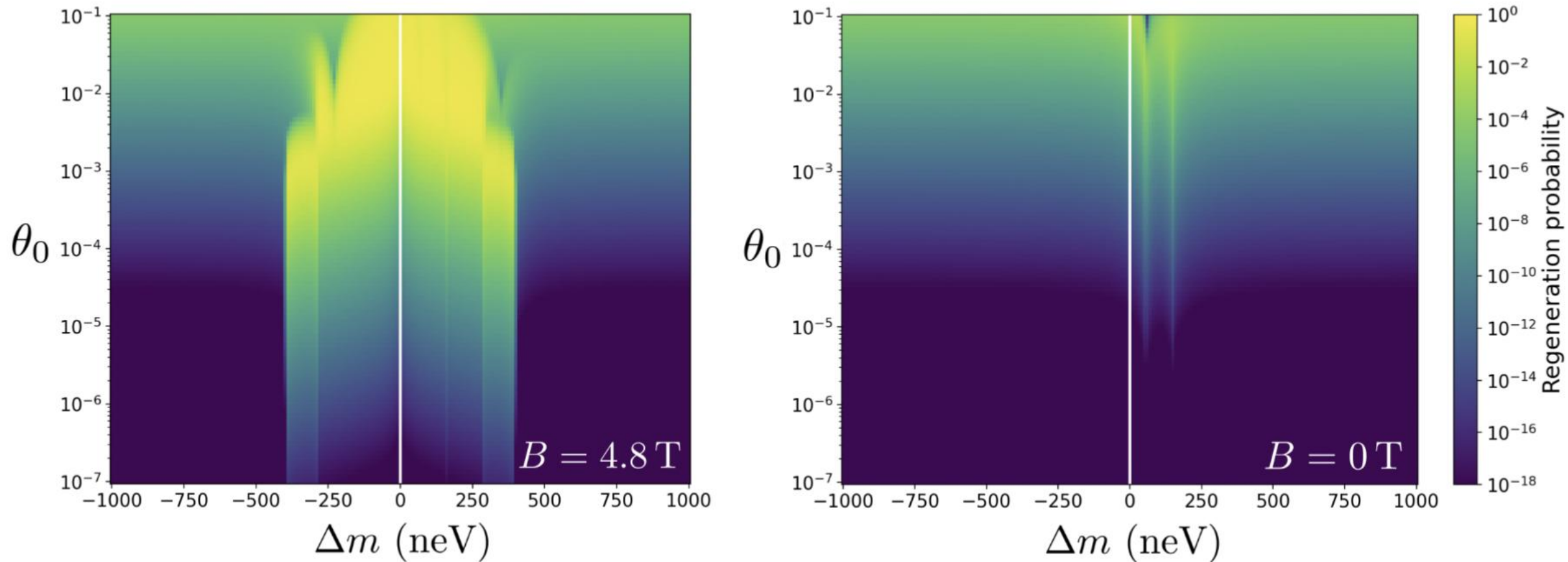


FIG. 8. Calculated regeneration probability ($n \rightarrow n' \rightarrow n$) as a function of the Δm mass difference and the mixing angle θ_0 . Central vertical lines separate two regions from 10 neV to 1000 neV for negative and positive Δm . Left panel shows the map of probability for 4.8 T magnetic field configuration. Right panel is for no magnetic field. See discussion in the text (color online).

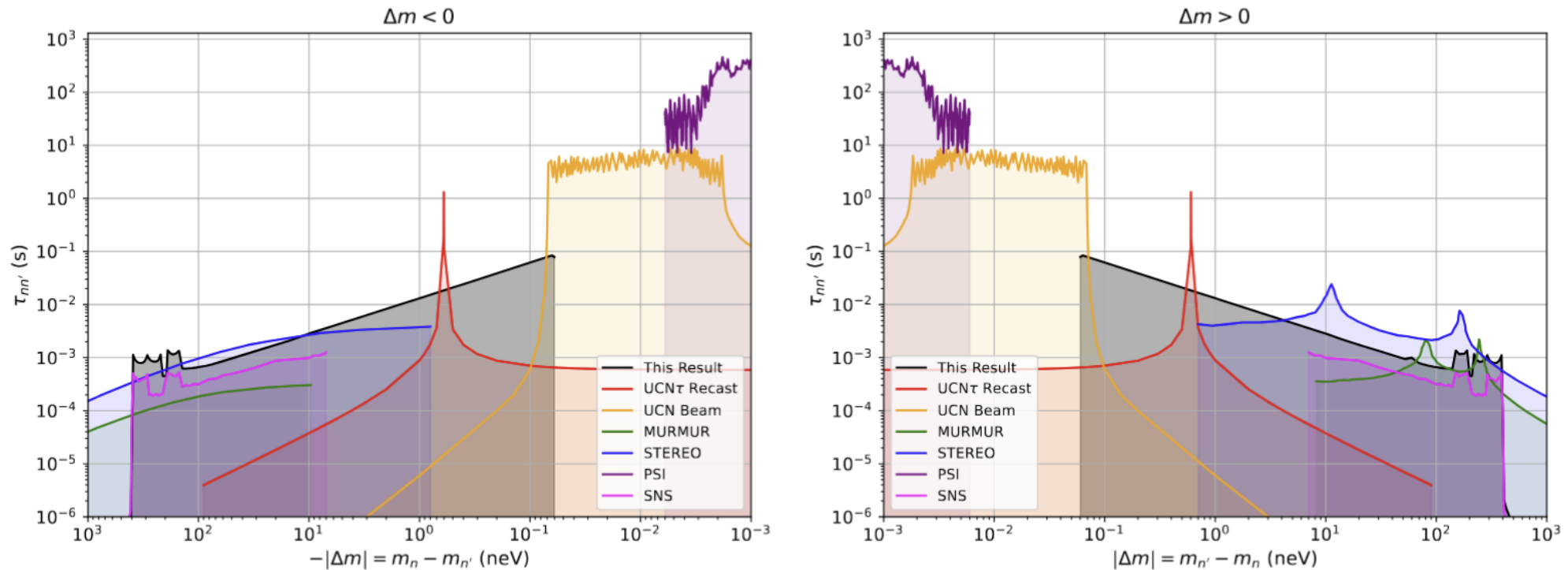
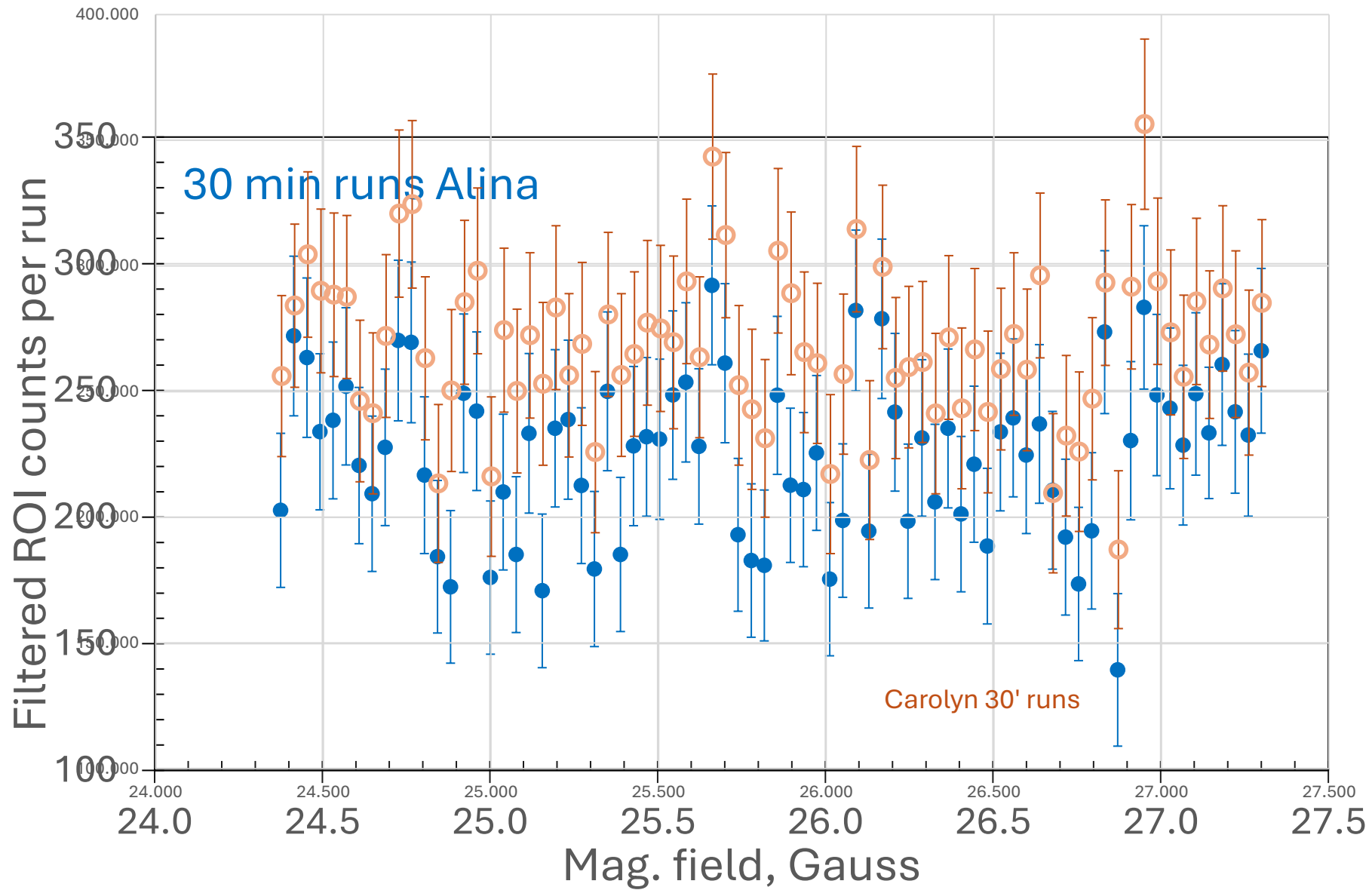
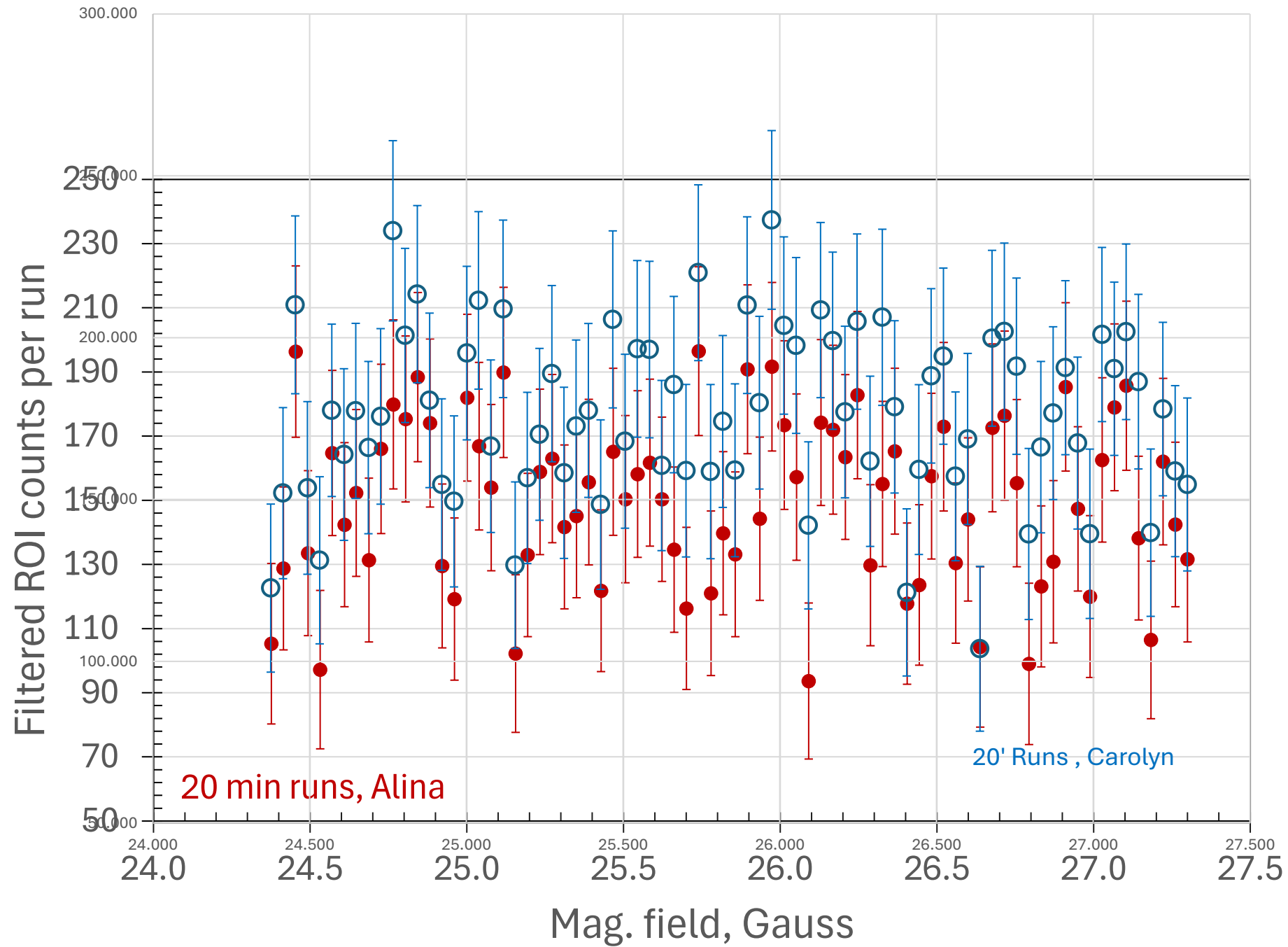


FIG. 10. Summary of most recent $\tau_{nn'}$ limits vs positive and negative Δm range from 6×10^{-5} to 1000 neV. Limits reported in this paper (gray area), overlaid with other searches for sterile neutrons, assuming a unified framework as proposed in [23]. Our previous SNS limits are taken from [4]. Results from UCN storage at PSI [24] have been recast from searches using searches for a nonzero \vec{B}' . The limit from UCN τ comes from the non-observation of anomalous losses, as calculated in [23]. UCN beam results use disappearance in the GADGET detector [25]. The STEREO and MURMUR reactor results below Δm are also presented from [26, 27]. The UCN $n \rightarrow n'$ limits [28] from neutron EDM search apparatus are not shown on this plot.

Update on nTMM-1 data analysis

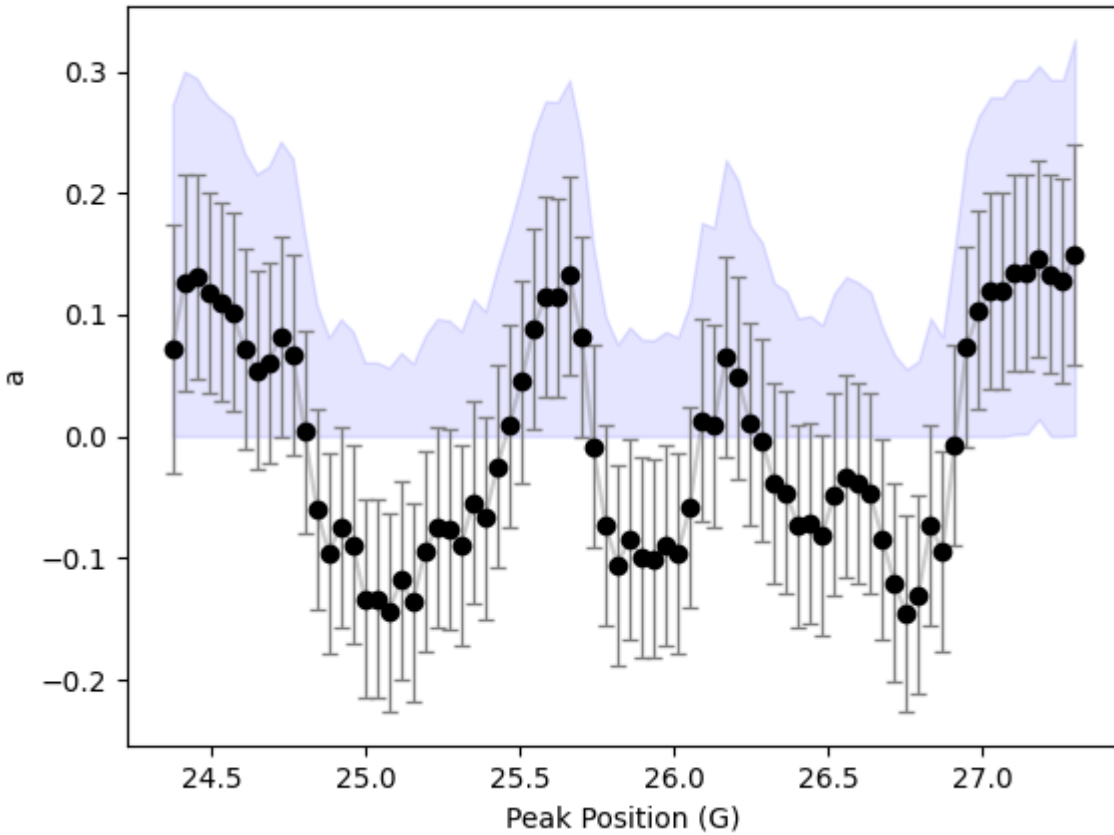
Yuri for Alina Moore



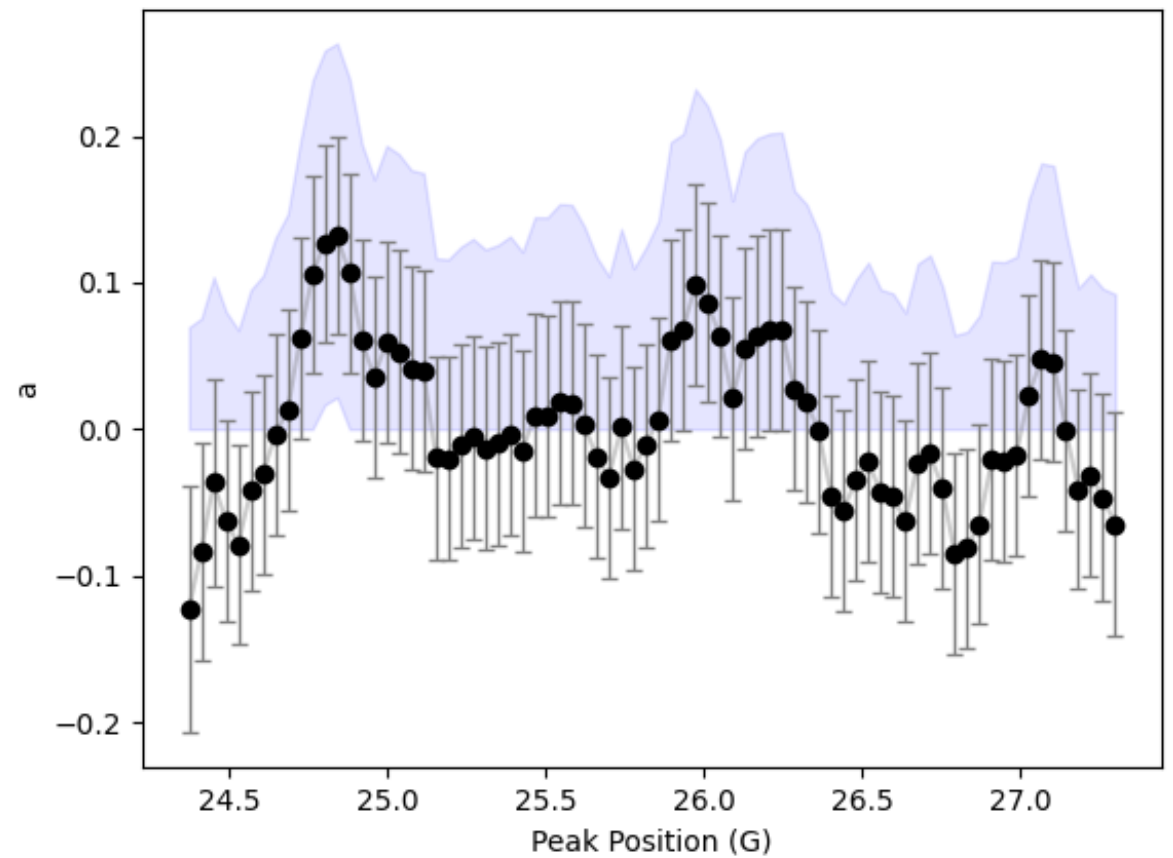


96% CL intervals in terms of a parameter (with errors of a)

95% FC Interval Estimates for 30 min runs (a)



95% FC Interval Estimates for 20 min run (a)



a parameter estimates from 1,000,000 fits of randomly generated BG data

30 mins

20 mins

scan	n_iterations	mean	sigma	max	min
1	1000000	9.59E-05	0.039	0.179	-0.202
2	1000000	-5.22E-05	0.032	0.155	-0.157

F-C 95% CL for $x_0=0.0$
is 1.96

F-C limit < 0.076

F-C limit < 0.063

Mean = 9.6e-05

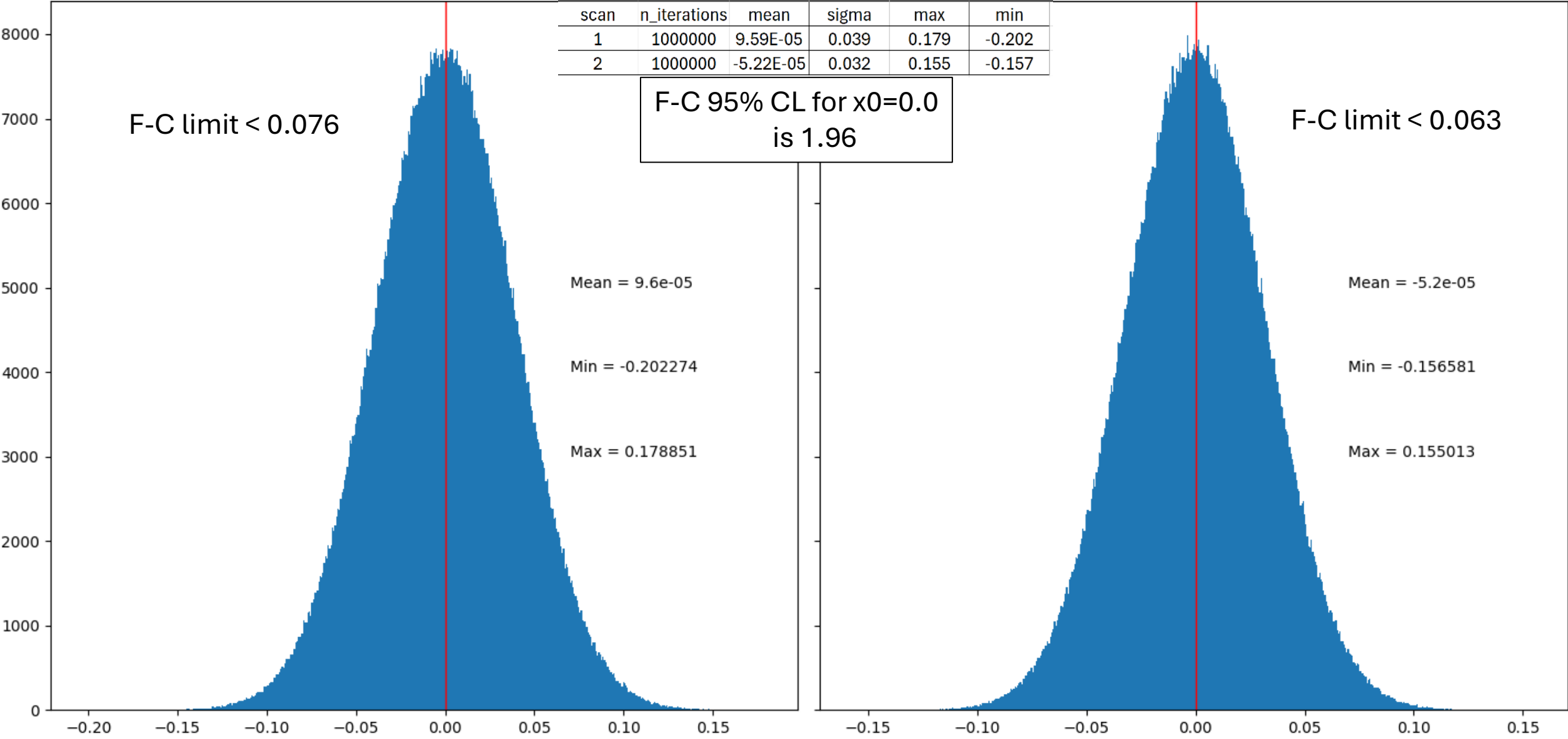
Min = -0.202274

Max = 0.178851

Mean = -5.2e-05

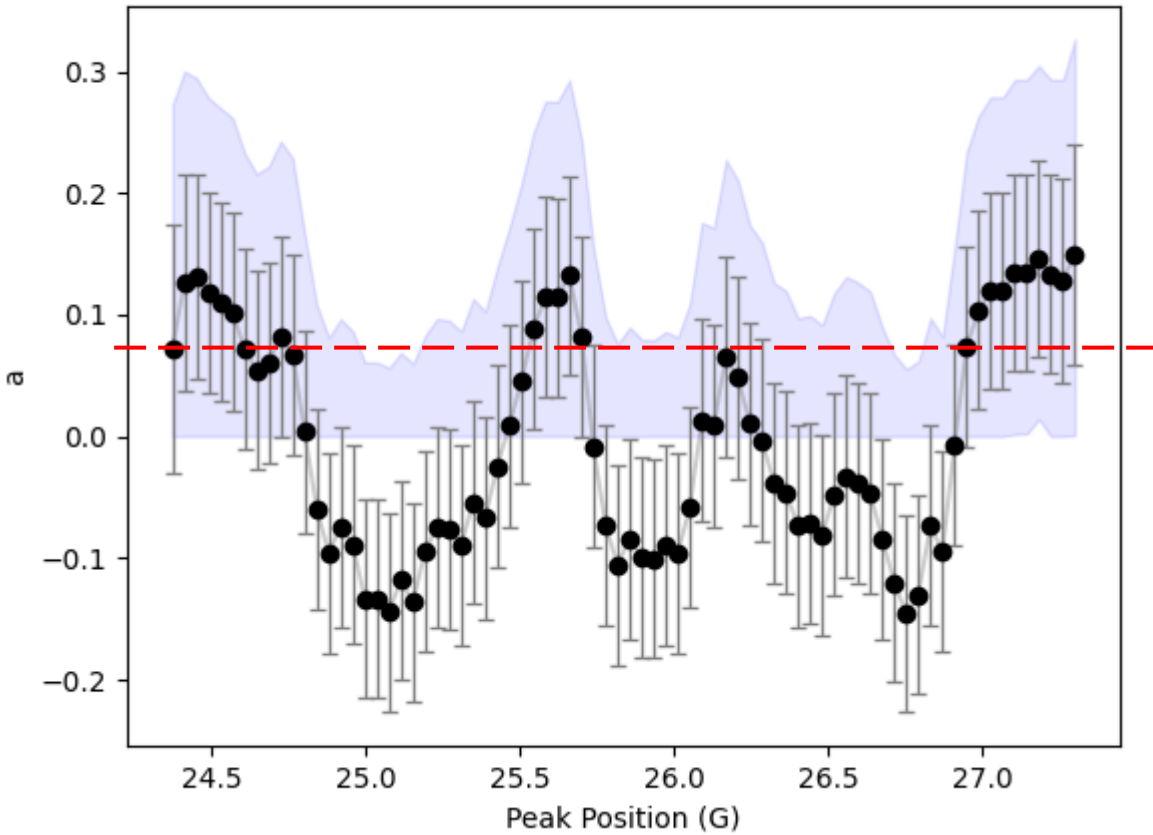
Min = -0.156581

Max = 0.155013



96% CL intervals in terms of a parameter (with errors of a)

95% FC Interval Estimates for 30 min runs (a)



95% FC Interval Estimates for 20 min run (a)

