SFIT Predictions for Next GRANIT-Style Run

Douglas G. Stevenson

March 2026

Abstract SFIT makes precise, falsifiable predictions for the next GRANIT-style ultra-cold neutron experiment. A detection at the specified frequency, phase, and contrast would provide strong independent confirmation of the theory.

Predicted Parameters

- Resonance frequency: 1.20134 mHz (± 0.00005 mHz)
- Geometric period: 833.3 seconds
- Phase of maximum overshoot: 416.65 seconds after each mirror-step trigger
- Expected contrast modulation: 0.122% ± 0.01% in detector flux
- Signature sidebands: J^2 / J^2 0.0152
- Relaxation tail: 832.6 s KWW decay, phase-locked to 1.2 mHz carrier

Recommended Experimental Setup

- Continuous run: 15–30 days
- Mirror steps: Synchronized to 833.3 s cycle
- Data binning: 1 s intervals for FFT analysis
- Detection window: Focus on z 28.5 m slit
- Analysis: Look for phase-locked 1.2 mHz peak in PSD

Falsifiability A null result at 1.20134 mHz with the predicted phase and sideband structure would tightly constrain or falsify SFIT.