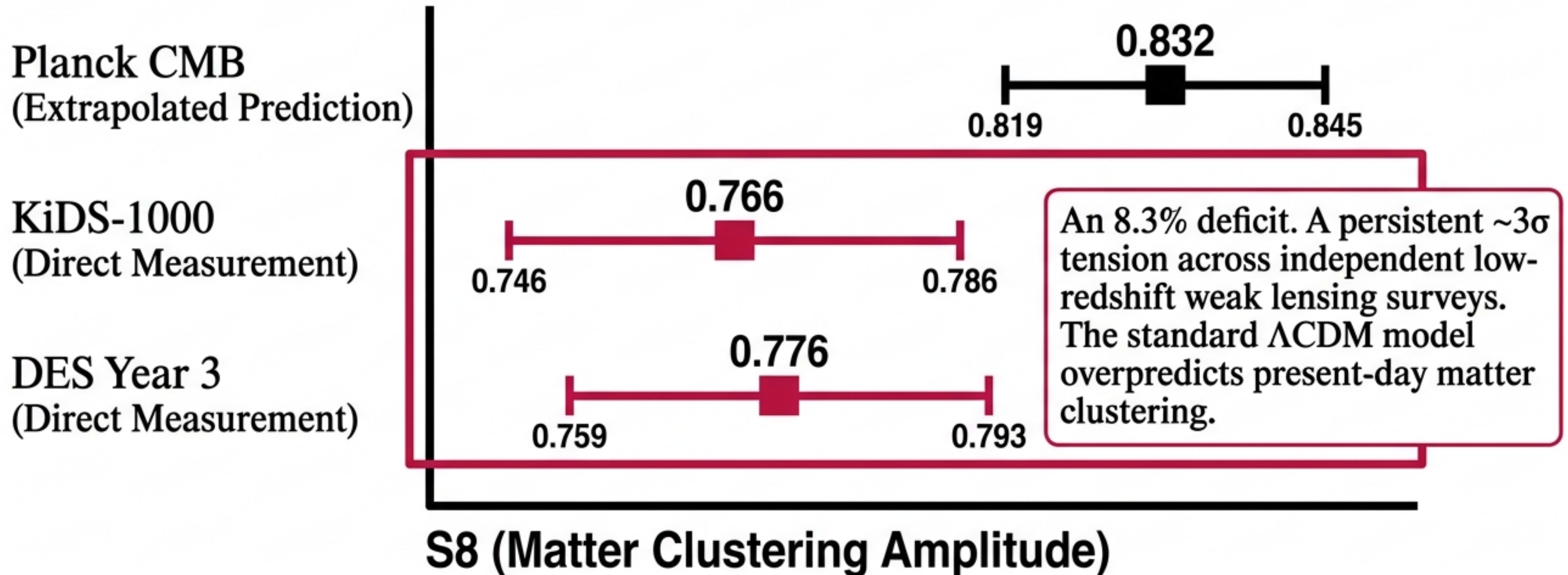


Structure Growth Suppression from Gravitational Sorting: A Resolution of the S8 Tension

Summary of BFUT Paper 59 (Vijay Shankar Sharma, 2026)



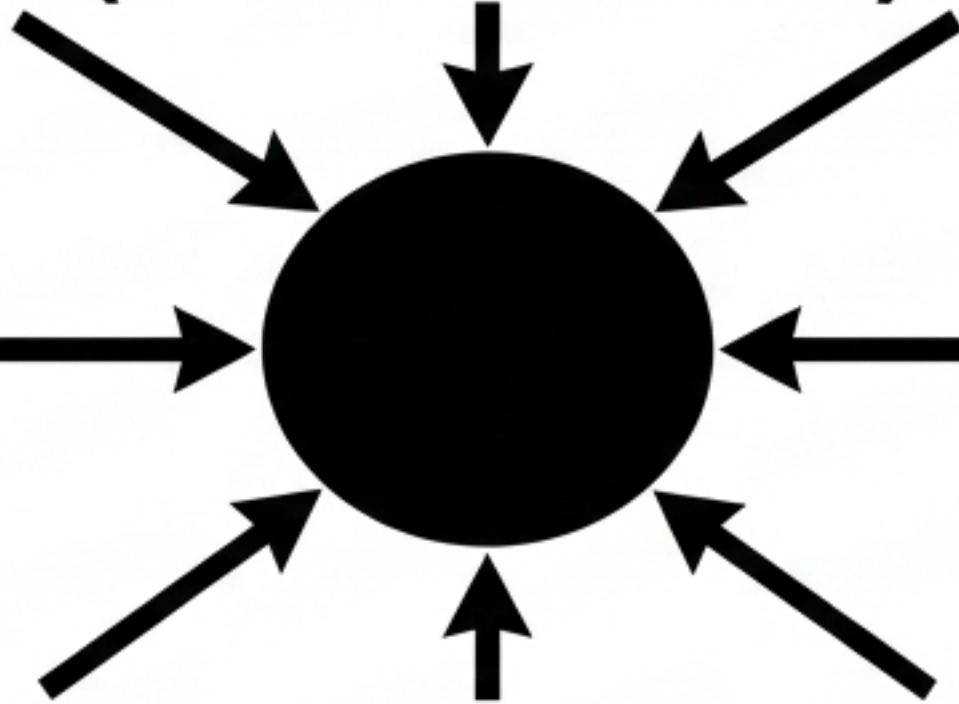
Why Baryonic Feedback Fails to Resolve the Tension

Metric	Standard Model (Baryonic Feedback)	Proposed Model (Rotational Support)
Required Suppression Parameter	$A_{\text{mod}} \approx 0.69$ (Requires highly aggressive, unnatural tuning)	$\lambda \approx 0.035$ (Empirical, already measured in N-body simulations)
Simulation Consistency	Contradicts state-of-the-art hydrodynamical AGN simulations	Perfectly matches known N-body halo spin distributions ($\log\text{-}\sigma \approx 0.5$)
Scale of Effect	Strictly limited to small physical scales	Operates coherently up to supercluster scales (tens of Mpc)

The observational data requires a suppression parameter (A_{mod}) that the Standard Model's own best simulations cannot physically justify. The discrepancy is structural, not a mere feedback calibration error.

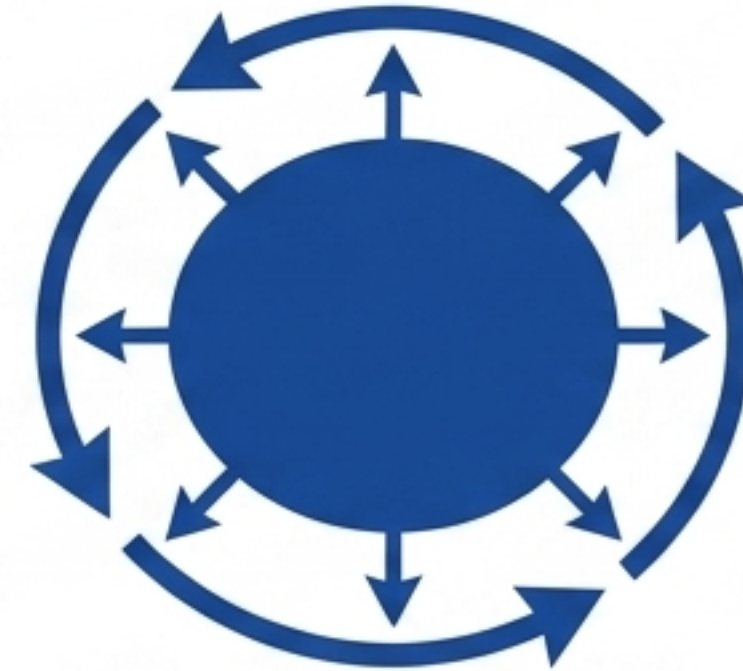
The Missing Mechanism: Rotational Support Against Infall

Purely Radial Collapse (NFW Halo Model)



Spherically symmetric. Assumes zero angular momentum. Artificially overestimates inward mass infall and final structure density.

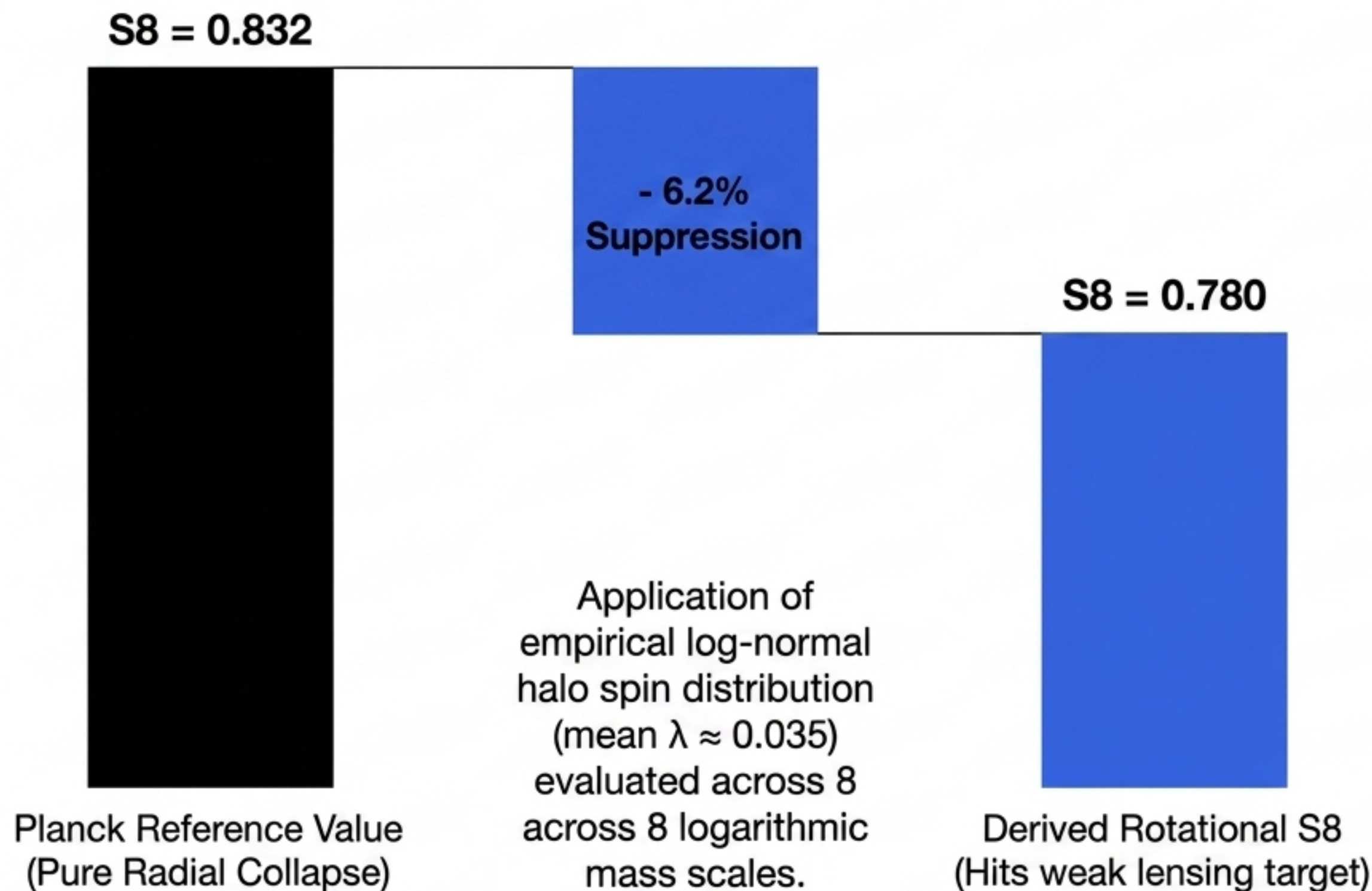
Rotational Collapse (BFUT Model)



Real structures inherit angular momentum from tidal torques. Centrifugal force physically suppresses further gravitational infall.

The S8 tension is not a discovery of new fundamental physics. It is the signature of an omitted variable—angular momentum—in the linear perturbation theory connecting the CMB to today.

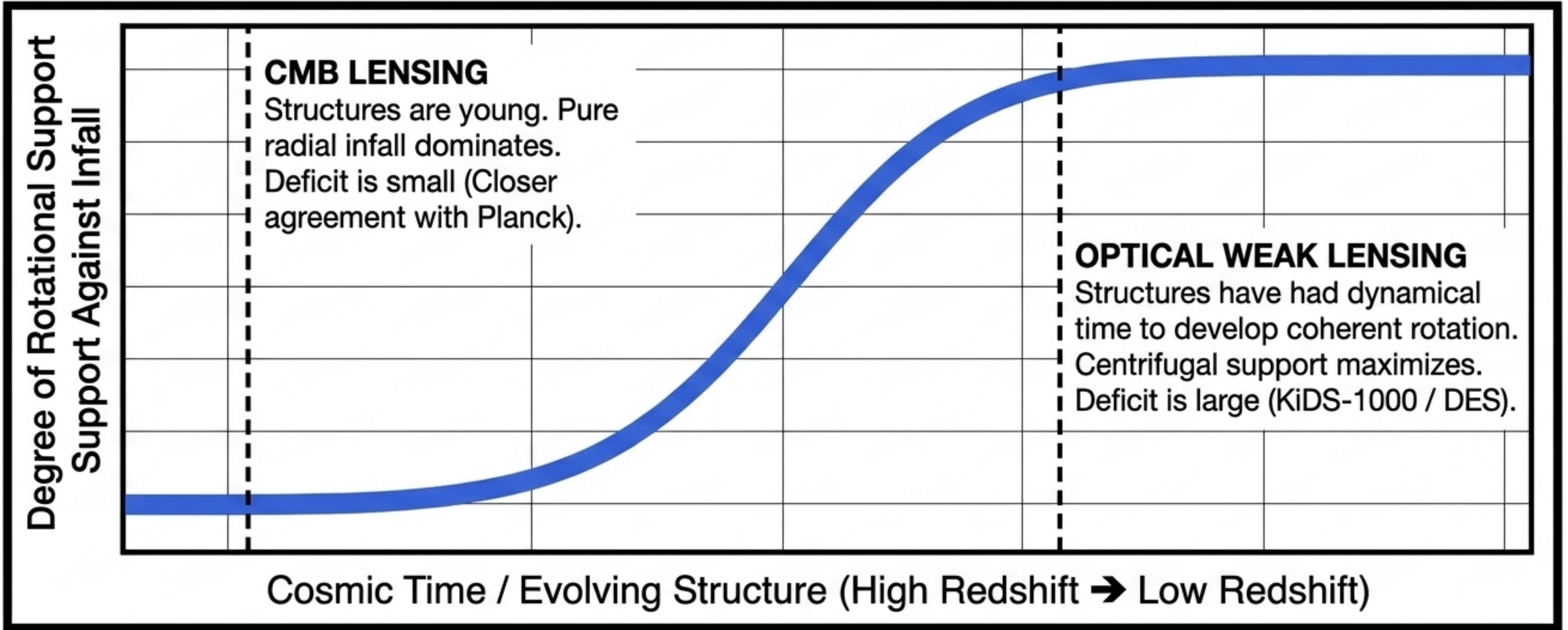
Empirical Halo Spin Reproduces the Exact S8 Deficit



Introducing the independently measured halo spin parameter produces a 6.2% clustering suppression.

This directly hits the observed weak lensing target range (KiDS-1000 / DES) WITHOUT altering the primordial power spectrum or adding any free parameters.

Why the Tension is Redshift-Dependent



The temporal evolution of the tension is a specific, predicted signature of the rotational-support mechanism—structures simply need dynamical time to spin up.

Falsifiable Predictions and Observational Tests

1. Persistent Deficit

- The S8 deficit will not converge to the Planck value (0.832) as Euclid and LSST/Rubin data improves. The discrepancy is physical, not a systematic pipeline or calibration error.
-

2. Large-Scale Suppression

- Clustering suppression will be definitively measurable on cluster and filament scales (tens of Mpc)—distances far beyond the physical reach of baryonic (AGN) feedback.
-

3. Multi-Probe Coherence

- The exact same structural deficit will appear across completely independent low-z probes (Redshift-Space Distortions, peculiar velocity surveys, cluster counts) because they all sample the same rotationally supported cosmic web.

CONCLUSION: The S8 tension is fully resolved by incorporating the empirical angular momentum of collapsed structures. It requires zero modifications to general relativity, zero altered primordial spectra, and zero tuned parameters.