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Dark energy studies with massive galaxy surveys

Friday, January 9, 2026 11:00 AM (25 minutes)

Large-scale structure has become a precision laboratory for testing gravity and dark energy. I will present recent results from our multi-tracer analyses of SDSS-IV/eBOSS luminous red and emission-line galaxies, using both configuration- and Fourier-space approaches. A key element is a "chained" multipole estimator that suppresses angular systematics, enabling robust use of auto- and cross-correlations to sharpen BAO/RSD constraints. I will then discuss a model-agnostic reconstruction of the dark-energy equation of state that combines DESI BAO, Type-Ia supernovae, and a CMB distance prior. The data suggest a coherent, mild departure from a cosmological constant—with an apparent crossing of the w=−1 boundary—while remaining consistent with current systematics tests. I'll close with prospects from ESST.

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