January 13, 2026

Dear Editor,

I am pleased to submit the manuscript entitled "**Observed Galaxy Abundances at z > 6 Exceed Halo-Limited Predictions in COSMOS-Web**" for consideration as a Letter in your journal. Using the newly released COSMOS2025 catalog—the definitive JWST COSMOS-Web data release—we identify 7,837 massive galaxies (log M*/M■ > 9) at z > 5 and compare their abundances against both forward-modelled predictions and, critically, the absolute upper limit set by halo abundances assuming 100% baryon-to-star conversion efficiency. **The key finding is stark:** at z > 8, observed galaxy counts exceed even the unphysical ε = 1 halo limit by factors of 3–10×. This tension cannot be resolved by adjusting star formation efficiency (already maximal), reducing feedback (already zero at ε = 1), or invoking duty cycle effects (which worsen the discrepancy). We further demonstrate that (1) the excess scales monotonically with redshift, (2) independent support comes from elevated specific star formation rates (Spearman ρ = 0.33, p < 10■[1]■), and (3) robustness tests show the tension persists (>20×) under maximally pessimistic assumptions combining photometric contamination, mass systematics, and cosmic variance. This work establishes a firm empirical tension that places strong constraints on early galaxy formation physics, without advocating for any particular theoretical resolution. We believe it will be of significant interest to the community working on JWST early universe observations. The manuscript has not been submitted elsewhere. All data and analysis code are provided as supplementary material to ensure full reproducibility. Thank you for your consideration.

Sincerely,

Morten Magnusson

Energy-Flow Cosmology Initiative

morten@magnusson.as

ORCID: 0009-0002-4860-5095