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Cosmology with the Secular Redshift Drift

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In a non-empty universe, the Hubble expansion is dynamic. Under the current cosmological paradigm, the expansion decelerated when the universe was matter-dominated but is now accelerating due to dark energy. The dynamic expansion can be observed directly as a secular cosmological redshift drift, and this measurement does not rely on the cosmological distance ladder or any cosmological model. The expected drift is very small, reaching a peak acceleration of roughly 0.4 cm/s/yr, but the ability of future astronomical facilities to measure this effect is nevertheless promising. I will review the expected signal, its dependence on cosmological parameters, and measurement forecasts based on radio and UV observations of neutral hydrogen transitions.

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