Do the Fundamental Constants change with time ?

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Astrophysical studies of redshifted spectral lines provide a powerful probe of putative changes in low-energy fundamental constants across a large lookback time. After reviewing the current state of the field, I will describe a new radio technique, using "conjugate" satellite OH 18cm lines, to measure changes in the fine structure constant α, the proton-electron mass ratio μ and the proton gyromagnetic ratio g_p, which is far less susceptible to systematic effects than other methods. I will then summarize our recent results from radio studies of fundamental constant evolution, based on three techniques: (1) "conjugate" satellite OH 18cm lines, (2) redshift comparisons between OH 18cm and HI 21cm lines, and (3) redshift comparisons between HI 21cm and ultraviolet CI lines. Finally, I will discuss the improvements that are likely to be possible in such studies with the advent of new telescopes such as the EVLA and ALMA over the next decade.