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Suggested Applicability of Position Varying G Theory When the Time Variation is Small JOHN JAMES, St. Louis University — The Dicke-Sciama equation for G, where $\frac{1}{G} = \sum \frac{m}{Rc^2}$ is summed over the mass of the universe not receding faster than the speed of light, can be derived from simple application of special relativity. G is then a function of the position of matter but G need not be varying with time in a significant way. The time variation due to Hubble expansion can be eliminated by new matter contributing to the sum above due to the slowing of the expansion. The time rate of change due to motion of the earth through the galactic plane is nearly comparable to the $\frac{dG/dt}{G} = \frac{10^{-13}}{year}$ constraint from experiment. Position variation of G from the DS equation explains the dark matter problem and type II population stars in a consistent manner. A reversal of the Carter analysis, in which there is a sensitivity of cosmic phenomena to physical constants, suggests a window on the observable portions of the universe. Only the portions of the universe where G is within a few percent of the value measured in our solar system are visible. The carter window analysis can be extended to explain the variation of heavy elements in stellar populations since supernovae distribution of such elements is also a very sensitive function of G.

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