I. INTRODUCTION

The most important observational advance in cosmology since the early studies of cosmic expansion in the 1920's was the dramatic and unexpected discovery, in the waning years of the twentieth century, that the expansion rate is accelerating. This was first announced in February 1998, based on the concordance of two groups' data on Supernovae Type 1A [1, 2].

A plethora of subsequent experiments concerning the Cosmic Microwave Background (CMB), Large Scale Structure (LSS), and other measurements have all confirmed the 1998 claim for cosmic acceleration. There have been many attempts to avoid the conclusion of the cosmic acceleration. Typically they involve an ingenious ruse which assigns a special place to the Earth in the Universe, in a frankly Ptolemaic manner and in contradiction to the well-tested and time-honored cosmological principle at large distance. We find these to be highly contrived and *ad hoc*.

We therefore adopt the position that the accelerated expansion rate is an observed fact which we, as theorists, are behooved to interpret theoretically with the most minimal set of additional assumptions.

II. INTERPRETATION AS DARK ENERGY

On the basis of general relativity theory, together with the cosmological principle of homogeneity and isotropy, the scale factor $a(t)$ in the FRW metric satisfies [3, 4] the Friedmann-Lemaître equation

$$H(t)^2 = \left(\frac{\dot{a}}{a}\right)^2 = \left(\frac{8\pi G}{3}\right)\rho \tag{1}$$

where we shall normalize $a(t_0) = 1$ at the present, time $t = t_0$, and ρ is an energy density source which drives the expansion of the universe. Two established contributions to ρ are ρ_m from matter (including dark matter) and ρ_γ radiation, so that

$$\rho \supseteq \rho_m + \rho_\gamma \tag{2}$$