

Abstract Submitted
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Quantum Information, Entropy, ALPHA, Hubble Time, and Dark Energy, Linked? SHANTILAL GORADIA, Gravity Research Institute, Inc — The postulation of fundamental constants by Newton, Einstein and Planck gave us natural units at Planck scale. Additional postulates may explain coupling constants. About sixty orders of magnitude of Planck times equal Hubble time (W). Substitution of W in Boltzmann's entropy equation ($S = k \ln W$; with Boltzmann constant $k= 1$ in natural units, and using the natural logarithm to probe nature) equates the statistical entropy (S) of the universe to about 137, the reciprocal of the fine-structure constant (α). Thermodynamic entropy ($dS = \delta Q/T$), a consequence of statistical entropy, implies that the fine-structure constant generates heat out of vacuum energy or dark energy. We draw support from the insights of Maxwell's demon (1867), Gamow (1967) and Eddington (1949). In information theory, entropy is linked to a measure of uncertainty, indicating that the fine-structure constant is greater than or equal to the reciprocal of the natural logarithm of the age of the universe: $\alpha \geq 1/\ln W$. The postulation in [1] (a draft of a 2008 planned review paper) will address further issues. [1] S. Goradia, What is Fine Structure Constant? <http://www.arxiv.org/abs/physics/0210040v3> (revised 1/6/2007)

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