Laboratory Observability of a Cosmologically Changing Light Speed FELIX T. SMITH, SRI International — Einstein's axiom of special relativity was not an invariant light speed, but less restrictive: The velocity of light is independent of the motion of the light source. This is compatible with an expanding hyperbolic position space tangent to Minkowski four-space [1]. In this geometry c decreases as $t^{-1/2}$ and a new Hubble-Lorentz expansion constant appears, $\sigma = c_0^2 H_0^{-1} = 3.89 \times 10^{34}$ m^{2}s^{-1}. The practical choice of c as a defined constant is then not relativistically invariant, and should be modified. The logarithmic rate of change of c is directly connected with the Hubble parameter, $d\ln c/dt = -H\left(t\right)/2$, with the present value -3.65×10^{-11} y^{-1}. In 1972 c was measured to 3.5 parts in 10^9. If this precision can now be improved by 10 or 100, the predicted rate of change of c can be tested. The issues involved in converting between cosmological and laboratory time and distance scales will be reported. Ultimately, a laboratory measurement of H_0 may be in prospect.

[1] F. T. Smith, Ann. Fond. L. de Broglie, **30**, 179 (2005); http://www.ensmp.fr/aflb/AFLB-302/table302.htm

Felix T. Smith
SRI International

Date submitted: 25 Jan 2006

Electronic form version 1.4