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Hamiltonian Symmetry in Special Relativity and the N-Body Dirac Equation: Progress Report FELIX T. SMITH, SRI International — At recent DAMOP, ICPEAC and ICAP meetings I have reported on the new symmetric special relativity (SSR) needed to cure a flaw in relativistic quantum dynamics responsible for the absence of an n-body Dirac equation [1]. In SSR both position and velocity space are hyperbolic. The Hubble length $\rho(t)$ and light speed c provide standards of length and velocity and share the cosmological time-dependence, $H(t) = c(t)/\rho(t)$. Their product is the new Hubble-Lorentz constant, $\sigma = c(t)\rho(t) = c^2 {H_0}^{-1} = 5 \times 10^{34} \mathrm{m}^2/\mathrm{s}$. The theory solves the center of mass problem and sustains an n-body Dirac equation, a fully relativistic Schrdinger equation, and a new, highly symmetrical hyperbolic Poincar group. It provides a systematic dynamical derivation for algorithms used for center-of-mass effects like mass polarization, recoil and reduced mass in precision calculations in atomic spectroscopy. While not yet within range of detection, the idea of measuring the Hubble parameter H_0 in a local spectroscopic process can now be contemplated. The theory and its most recent results and implications will be reported. [1] F. T. Smith, Ann. Fond. L. de Broglie, to be published.

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