Abstract Submitted
for the DAMOP15 Meeting of
The American Physical Society

"Simplest Molecule" Clarifies Modern Physics II. Relativistic Quantum Mechanics WILLIAM HARTER, University of Akansas (Fay.) / Harter-Soft, TYLE REIMER, Heyoka Technical Consulting / University of Akansas (Fay.) — A "simplest molecule" consisting of CW- laser beam pairs helps to clarify relativity from poster board - I. In spite of a seemingly massless evanescence, an optical pair also clarifies classical and quantum mechanics of relativistic matter and antimatter. Logical extension of (x,ct) and (ω,ck) geometry gives relativistic action functions of Hamiltonian, Lagrangian, and Poincare that may be constructed in a few ruler-and-compass steps to relate relativistic parameters for group or phase velocity, momentum, energy, rapidity, stellar aberration, Doppler shifts, and DeBroglie wavelength. This exposes hyperbolic and circular trigonometry as two sides of one coin connected by Legendre contact transforms. One is Hamiltonian-like with a longitudinal rapidity parameter ρ (log of Doppler shift). The other is Lagrange-like with a transverse angle parameter σ (stellar aberration). Optical geometry gives recoil in absorption, emission, and resonant Raman-Compton acceleration and distinguishes Einstein rest mass, Galilean momentum mass, and Newtonian effective mass. (Molecular photons appear less bullet-like and more rocket-like.) In conclusion, modern space-time physics appears as a simple result of the more self-evident Evenson's axiom: "All colors go c."

William Harter
University of Akansas (Fay.) / Harter-Soft

Date submitted: 30 Jan 2015 Electronic form version 1.4