1167-70-230   **David Carfì*** (`davidcarfi@gmail.com`), Messina, Italy. *Relativistic Schrödinger equation and probability currents for quantum particles.*

In this work, we face the problem of quantizing the relativistic Hamiltonian of a quantum particle (electrons, photons, etc.). In tempered distribution state spaces, we find the natural way to define the relativistic Hamiltonian operator and its associated Schrödinger equation. We, then, deduce the equivalent continuity equation for the Born probability density and study some its different (but equivalent) expressions. We determine the possible probability currents and flux velocity fields associated with the particle evolution. We provide the relativistic invariant expression for both Schrödinger equation and probability flux continuity equations. (Received March 08, 2021)