957-28-56   **Patrick Muldowney*** (`P.Muldowney@ulst.ac.uk`), Magee College, University of Ulster,
Northland Road, BT48 7JL Derry, No Ireland. *Existence Conditions for Feynman Path Integrals.*

Using Henstock's theory of integration of functions whose domain is a space of real-valued functions, proofs have been given for the results in R.P. Feynman's 1948 paper "Space-time approach to non-relativistic quantum mechanics" (Reviews of Modern Physics, 20, 367-387). Conditions for which Feynman's results are valid have been established. The existence of a Feynman integral, expressed in terms of Henstock's theory, depends on the "measurability" of the potential function V, in the sense of the integrability of V in certain finite-dimensional senses. (Received June 15, 2000)