1096-32-742 **Clinton Cooper Zimmerman*** (clintonzim@aol.com), 16612 Sioux Lane, Gaithersburg, MD 20878. *Use of novel complex metrics in the derivation of the sum of paths transition function.* Preliminary report.

Consider a path defined by segments ABCD. Suppose segment AB had real length,BC had imaginary length and CD had real length so that a particle traveling over AB would travel a real distance X1 and a particle traveling over BC would travel an imaginary distance iX2 where X1 and X2 are real. This defines a grid, a path defined by alternating real and imaginary segments. Grids can be defined with large numbers of imaginary segments. Grids can be given a specific physical interpretation in quantum systems. The paper discusses general mathematical properties of grids such as segment swap which is the rearrangement of real segments on a grid. Parallel and serial annihilation which is the sequential or simultaneous removal of imaginary segments from a grid in a measurement process and the generation of paired or associated segments in a multi-grid system. The paper derives a general rule for calculating probabilities in any system parameterized by grids called the composition theorem and gives a result of fundamental importance by deriving the Feynman transition function used in quantum mechanics. (Received September 14, 2013)