General Physics Notes (08312026):

Let's cover scattering. Here we have Dirac notation and some integration over the solid angle. We'll just cover a brief section.

$$\left.\begin{array}{l} \frac{-2\pi}{\hbar^2}\mu\langle k'|W|k;+\rangle \\ \frac{-2\pi}{\hbar^2}\mu\langle k';-|W|k\rangle \end{array}\right\} = f(k \to k')$$

This is a scattering concept with the initial and finals states. Of course we have to complexify it or involve inflation and punctuated equilibrium with the zeta calculus.

$$\left.\begin{array}{l} \frac{-2\pi}{\hbar^2}\mu\langle k'|W\cdot\zeta(s,t)|k;+\rangle \\ \frac{-2\pi}{\hbar^2}\mu\langle k';-|W\cdot\zeta(s,t)|k\rangle \end{array}\right\} = f(k \to k')f(s,t)$$

Here is a correlated evolution with a new scattering position with frequency and position coordinate. The time variable is added for reference as well.

$$\frac{\partial\sigma}{\partial\Omega}(\vec{k}-\vec{k'}) = |f(k-k')|^2 \tag{1}$$

We have some relations that should not be too bad.

$$\langle\vec{r}|\vec{k};+\rangle = (2\pi)^{\frac{3}{2}}e^{ik\cdot r} + \int \partial^3\vec{r'}\langle r|G^{(0)}(E+io|r'\rangle \times W(\vec{r'})\langle\vec{r'}|\vec{k};+\rangle \tag{2}$$

This is the plane wave with correction. Of course we'll also have to modify this with zeta calculus and a zeta term. Turbulence is built into the zeta summation as well and we shall uncover RJ and KH instabilities quite quickly. Recall...

$$T(E\pm io)|k\rangle = W|\vec{k};\pm\rangle \tag{3}$$

We are seeing very primitive behavior as it relates to the structure of spacetime. The string geodesic landscape requires new zeta summations.

$$\langle\vec{s}|\vec{k}_s;\pm\rangle = \zeta(s,t)A_{n\otimes n}e^{ik\cdot s} + \int \partial^n\vec{s}\langle initial|G\times W|final\rangle \tag{4}$$

It is critical to note that the boundaries on the zeta still exist, that is why there is an initial and a final in the waveform. We see the string geodesic's extrinsic properties extrapolated by this term and the Dirichlet boundary condition. Recall T is kinetic energy, E is total energy, W is potential, and k is the wavenumber. We have spacetime (s,t) and so forth.

If you would like to know more, please look at my handwritten notes.