GEOMETRIC APPROACH TO QUANTUM GRAVITY IDEA

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Abstract. I will explore in brief a simple geometry that could unify quantum physics with general relativity.

1. Field

In this paper i present a simple scalar field model that could be solution to quantum gravity problem. This scalar field depends on metric tensor g and energy tensor T. I can write field equation , where angle of rotation of coordinate system is $\phi = \varphi \left(1 - \sigma\right)$ where σ is spin, $\hat{R}$ is rotation matrix and φ is rotation angle of system. Coordinate system when rotated is equal to: $\mathbf{x}' = \hat{R}\left(\phi\right)\mathbf{x}$, now i can write field equation as, where constant κ is equal to $\kappa = \frac{1}{\hbar}$ or $\kappa = \frac{1}{\hbar c}$ depending on do i use time or space units:

$$\begin{gathered}\partial_{\alpha_1}...\partial_{\alpha_n} g^{\beta_1\gamma_1}\left(\mathbf{x}'\right)...g^{\beta_n\gamma_n}\left(\mathbf{x}'\right)\partial_{\gamma_1}...\partial_{\gamma_n}\Psi^{\alpha_1...\alpha_n}_{\beta_1...\beta_n}\left(\mathbf{x}'\right)\\ -\partial_{\alpha_1}\partial_{\beta_1}...\partial_{\alpha_n}\partial_{\beta_n} g^{\alpha_1\beta_1}\left(\mathbf{x}'\right)...g^{\alpha_n\beta_n}\left(\mathbf{x}'\right)\\ = \kappa^{2n} g_{\gamma_1\alpha_1}\left(\mathbf{x}'\right)...g_{\gamma_n\alpha_n}\left(\mathbf{x}'\right) g^{\gamma_1\beta_1}\left(\mathbf{x}'\right)...g^{\gamma_n\beta_n}\left(\mathbf{x}'\right) T^{\alpha_1...\alpha_n}_{\beta_1...\beta_n}\left(\mathbf{x}'\right)\end{gathered} \tag{1.1}$$

Probability of finding particle or many particle collection in volume V is equal to some volume of particle or particles in time interval divided by whole field volume in that time interval:

$$\rho\left(\mathbf{x}\right) = \frac{\int_{0,V\in X^n}^{ct,V\in X^n} \Psi\left(\mathbf{x}'\right) d^n\mathbf{x}'}{\int_{0,X^n}^{ct,X^n} \Psi\left(\mathbf{x}'\right) d^n\mathbf{x}'} \tag{1.2}$$

Field density does change with time if field expands so probability is time dependent. Field equation has n^3 independent components where n is number of dimensions. Space-time interval no longer consist of one metric tensor but n ones:

$$ds^{2n} = g_{\alpha_1\beta_1}\left(\mathbf{x}'\right)...g_{\alpha_n\beta_n}\left(\mathbf{x}'\right) dx^{\alpha_1}dx^{\beta_1}...dx^{\alpha_n}dx^{\beta_n} \tag{1.3}$$