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:

$$\begin{gathered}\partial_{\alpha_1}...\partial_{\alpha_n}\Psi^{\alpha_1...\alpha_n}\left(\hat{R}\left(\phi\right)\mathbf{x}\right)g^{\beta_1\gamma_1}\left(\hat{R}\left(\phi\right)\mathbf{x}\right)\\ ...g^{\beta_n\gamma_n}\left(\hat{R}\left(\phi\right)\mathbf{x}\right)\partial_{\gamma_1}...\partial_{\gamma_n}\Psi_{\beta_1...\beta_n}\left(\hat{R}\left(\phi\right)\mathbf{x}\right)\\ -\partial_{\alpha_1}...\partial_{\alpha_n}\partial_{\beta_1}...\partial_{\beta_n}g^{\alpha_1\beta_1}\left(\hat{R}\left(\phi\right)\mathbf{x}\right)...g^{\alpha_n\beta_n}\left(\hat{R}\left(\phi\right)\mathbf{x}\right)\\ =g_{\gamma_1\alpha_1}\left(\hat{R}\left(\phi\right)\mathbf{x}\right)...g_{\gamma_n\alpha_n}\left(\hat{R}\left(\phi\right)\mathbf{x}\right)T^{\alpha_1...\alpha_n}\left(\hat{R}\left(\phi\right)\mathbf{x}\right)g^{\gamma_1\beta_1}\left(\hat{R}\left(\phi\right)\mathbf{x}\right)\\ ...g^{\gamma_n\beta_n}\left(\hat{R}\left(\phi\right)\mathbf{x}\right)T_{\beta_1...\beta_n}\left(\hat{R}\left(\phi\right)\mathbf{x}\right)\end{gathered}\tag{1.1}$$

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:

$$\rho\left(\mathbf{x}\right)=\frac{\int_{0,V\in X^3}^{ct,V\in X^3}\Psi\left(\mathbf{x}\right)d^4\mathbf{x}}{\int_{0,X^3}^{ct,X^3}\Psi\left(\mathbf{x}\right)d^4\mathbf{x}}\tag{1.2}$$

Where measurement does not change state of field, it's only where particle or collection of them was found, but field density does change with time if field expands so probability is time dependent. Time and massless particles travel with change equal to one over Planck unit of time or space. Field has both properties of quantum traveling wave in curved space time that is solution to field equation.