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Scalar Particles Creation by an External Electric Field in a Non-Commutative Space-time

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The phenomenon of scalar particles creation in a non-commutative space-time when an electric field is present, is analyzed. Our purpose is to study the effect of the electric field on the creation of particles from vacuum. We have used the Bogoliubov transformation technique to calculate the number density of the spin-0 created particles in a non-commutative space-time, it is necessary to specify the asymptotic behavior of “in” and “out” vacuum states. This method based on the exact mode functions.

According to the formalism of Klein-Gordon equation in non-commutative space-time, We investigated the mechanism of particles production from the solutions which are in terms of special functions. The results have been interpreted.

The obtained results confirm the fact that particle creation is a property of curved space-time, Our aim in the future is to study the process of Dirac particles creation in non-commutative spaces.

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