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Dirac equation in (1+1)D Rindler Spacetime and its mapping to Multiphoton QRM and exterior solutions of (1+1)D blackhole[1] SANKARSHAN SAHU, Indian Institute of Engineering Science and Technology, Shibpur, PARTHA NANDY, BISWAJIT CHAKROBORTY, S.N. Bose National Centre for basic Sciences — In this paper some aspects of Quantum mechanics has been studied in Rindler spacetime. We show that in Rindler spacetime phenomenons like squeezing and Zitterbewegung effect takes place. We try to find out the energy spectrum of the given Hamiltonian in Rindler spacetime through Perturbation techniques. Since the solution to the Hamiltonian is non-normalizable we also introduce a re-normalization scheme. We non perturbatively calculate the eigenstates of the Dirac Hamiltonian in Rindler spacetime in case of massless fermions. We then map our solutions to Multiphoton Quantum Rabi Model which can be easily used for the simulation of this problem. Also Since the metric for a schwarzchild black hole is equivalent to Rindler metric near the event horizon, our calculations can also be extended to exterior solutions of (1+1)D blackhole systems. We calculate the energy eigenstates and energy eigenvalues in case of exterior solutions to schwarchild's black hole. We also calculate the entropy of the blackhole with respect to a particle free-falling into the black hole. We also try to find out the critical temperature at the horizon of the blackhole .

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