

1116-46-515

Tatsuya Tate*, 6-3, Aza-Aoba, Aramaki, Aoba-ku, Sendai, Miyagi 980-8578, Japan. *Localization for periodic unitary transition operators*. Preliminary report.

Localization, which is in the title, means a phenomenon that the transition probabilities at a site defined by a transition operator can not tend to zero as time goes to infinity. Such a kind of phenomenon arises easily for simple classes of one dimensional quantum walks. The periodic unitary transition operators, which is also in the title, is a generalization of quantum walks with constant coin matrices and their products in any dimension. In this talk, the localization phenomenon for the periodic unitary transition operators are discussed. In fact, it is easy to show that the localization does not happen if the transition operator has absolutely continuous spectrum. In the talk, a criterion for the periodic unitary transition operators to have absolutely continuous spectrum will be given. This criterion has been well-known for certain class of self-adjoint operators. However, it should be noted that known results for self-adjoint case are not used in our proof. Indeed, our proof is rather concrete and constructive. A criterion in terms of the coin matrix, which is obtained by a recent joint work with T.Komatsu, is also given. (Received September 05, 2015)