

Abstract

In this work, we have expounded the communication procedure of quantum systems by means of process algebra. The main objective of our research effort is to formally represent the communication between distributed quantum systems. In this new proposed communication model we have ameliorated the existing transition rules of Milner's quantum process algebra QPAlg. We have brought some important modification in QPAlg by introducing the concept of formally specifying the Quantum Teleportation protocol. We have further introduced the formal description of protocol by using programs that best explains its working and satisfies the specification. Examples have been provided to describe the working of the improved transition rules that formally explain the sending and receiving of both classical as well as quantum data, keeping in mind the principal features of quantum mechanics.