Probability distributions for characterising Entanglement of mixed states

V. Ravishankar, Shanthanu Bhardwaj
Department of Physics
Indian Institute of Technology, Kanpur-208016, INDIA
e-mail : vravi@iitk.ac.in

Given a mixed two qubit state (realized by an ensemble of pure states), we propose that its entanglement is properly described by a distribution function $\rho(\varepsilon)$. There is a need for such a measure since the prevalent measures (such as *concurrence* and *negativity*) are rough benchmarks, and not monotones of each other. We provide an explicit construction of $\rho(\varepsilon)$ which is invariant under local *SU(2) x SU(2)* transformations. $\rho(\varepsilon)$ allows us to reconstruct the state upto local transformations with the specification of at most two additional parameters. Finally the new measure resolves the controversy regarding the role of entanglement in quantum computation in NMR systems.