Localizable Entanglement and Partial K-way Negativities of Four Qubit States[1] SANTOSH SHELLY SHARMA, Departamento de Fisica, Universidade Estadual de Londrina, Londrina 86051-990, PR Brazil, NARESH KUMAR SHARMA, Departamento de Matematica, Universidade Estadual de Londrina, Londrina 86051-990, PR Brazil — We use selective partial tansposition to construct partial K- way negativities (K is 2 to 4) that measure the bi-partite, tripartite, and genuine 4-partite entanglement of single copy four qubit states in normal form. For a state in normal form, the partial K-way negativities are polynomial functions of local invariants characterizing the state, as such proper entanglement measures. Nine families of four qubit states, obtained by Versraete et al. [F. Versraete, J. Dehaene, B. De Moor, and H. Verschelde, Phys. Rev. A65, 052112 (2002)], are grouped in two distinct classes that is, (i) states with zero three-way partial negativity and, (ii) states with finite three-way partial negativity. We derive relations between the contribution of a K-way partial transpose to negativity of global partial transpose and the optimum localizable entanglement that may be filtered out from the state through qubit state measurement and classical communication.

Santosh Shelly Sharma
Universidade Estadual de Londrina, Londrina 86051-990, PR Brazil

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