

Abstract Submitted
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Polynomial invariants to quantify Four-body Correlations¹ SANTOSH SHELLY SHARMA², Depto. de fisica, Universidade Estadual de Londrina, Londrina Pr, Brazil, NARESH KUMAR SHARMA, Depto. de Matematica, Universidade Estadual de Londrina, Londrina Pr, Brazil — Local unitary invariance and notion of negativity fonts are used as the principle tools to construct four qubit polynomial invariants of degree 8, 12, and 24. Determinants of negativity fonts are linked to matrices obtained from state operator through selective partial transposition. Our general aim is to construct the polynomial invariants that quantify entanglement due to K -body correlations in an N -qubit ($N?K$) pure state. This is done by constructing N -qubit invariants from multivariate forms with $(K - 1)$ -qubit invariants as coefficients. In particular, the invariant that quantifies entanglement due to N -body correlations is obtained from a biform having as coefficients the $N - 1$ qubit invariants. A polynomial invariant that is non-zero on four qubit pure states with four-body correlations and zero on all other states, is identified. Classification of four qubit states into seven major classes, using criterion based on the nature of correlations, is discussed.

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