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Negativity and phase transitions in Spin-1 anisotropic Heisenberg model with Longitudinal Crystal Field ARMEN KOCHARIAN, California State University, Los Angeles, NERSES ANANIKYAN, LEV ANANIKYAN, VAHAGN ABGARYAN, Yerevan Physics Institute — Quantum entanglement which refers to quantum correlations has emerged as one of the important sign of critical behavior in various many-body quantum mechanical systems. We analyze the behavior of entanglement and concurrence for sign of quantum phase transition by exact diagonalization technique in small bipartite and frustrated Heisenber-like clusters. The quantum entanglement, particle and spin susceptibilities in bipartite and frustrated qubits for spin-1 anisotropic Heisenberg model with biquadratic exchange, longitudinal crystal and magnetic fields are calculated in terms of negativity for ferromagnetic and antiferromagnetic exchange interactions. The correlation between the plateaus behavior, the conditions for a high density quantum entanglement and lines with continuously- varying quantum critical points are found for ordered phases with different spin concentrations in assembled spin-1 nanoclusters and bosonic particles in the optical lattices.

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