Generation of N-particle Dicke-Class States and their Application to Quantum Information Processing DANIEL DEYOUNG, KISHOR KAPALE, Western Illinois Univ — Dicke class states are maximally entangled states of atoms or atom-like two-state entities involving a small number of excitations (much less that the total number of atoms). It has been shown in the literature [Z.H. Peng, J. Zou, X.J. Liu, Eur. Phys. J. D 58, 403-407 (2010)] that the so-called asymmetric Dicke states, which carry different relative phases for different permutations corresponding to different atomic entity being in the excited state, are more useful for quantum information processing tasks than the symmetric Dicke states. We have devised a practical conceptual proposal for generation of asymmetric Dicke states based on a proposal to generate symmetric Dicke states [Thiel et al. Phys. Rev. Lett. 99, 193602 (2007)]. We shot that the asymmetric Dicke-class states can be used for perfect teleportation [Agrawal and Pati, Phys. Rev. A 74 062320 (2006)] and dense coding.

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