

Abstract Submitted
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The $su(1,1)$ symmetry of tripartite entangled Gaussian states¹

BARRY SANDERS, ZAHRA SHATERZADEH YAZDI, PETER TURNER, University of Calgary — Two-mode squeezed light has been central to theoretical and experimental studies of continuous variable quantum information processing and to quantum foundations. More recently the generalization of these states to three-mode squeezed light has been achieved in the context of quantum teleportation [1] and state sharing [2]. Theories are typically developed in Gaussian or position representations, but we have discovered that all tripartite entangled Gaussian states of these types are in fact $su(1,1)$ coherent states with respect to an intriguing three-boson realization of $su(1,1)$ first noticed by Sebawe Abdalla et al [3]. This symmetry provides insights into the useful properties of these states and suggests ways to generalize theories and applications of multipartite entangled Gaussian states. [1] A. Furusawa et al, *Science* **282**, 706 (1998). [2] A. M. Lance et al, *Phys. Rev. Lett.* **92**, 177903 (2004). [3] M. Sebawe Abdalla et al, *Eur. Phys. J. D* **13**, 423 (2001).

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