Spin Coherent States Without Squeezing

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Abstract : We propose in this article a new configuration of quantum states, $|\alpha, \beta> := |\alpha> \times |\beta>$. Which are composed of vector products of two different copies of spin coherent states, $|\alpha>$ and $|\beta>$. Some mathematical as well as physical properties of such states are discussed. For instance, it has been shown that the cross products of two coherent vectors remain coherent again. They admit a resolution of the identity through positive definite measures on the complex plane. They represent packets similar to the true coherent states, in other words we would not expect to take spin squeezing in any of the field quadratures $\hat{L}_x$, $\hat{L}_y$ and $\hat{L}_z$. Depending on the particular choice of parameters in the above scenarios, they can be converted into the so-called Dicke states which minimize the uncertainty relations of each pair of the angular momentum components.

Keywords : vector (Cross-)products, minimum uncertainty, angular momentum, measurement, Dicke states
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