

Quantum Correlation of Many Atoms in Spinor Bose-Einstein Condensates

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Abstract: In this letter, we have studied sub-Poissonian distributions and quantum correlation of atoms in spinor Bose-Einstein condensates. It is found that there exists the sub-Poissonian distributions for spin-1 and spin-(-1) components, respectively. There may exist the violation of the Cauchy-Schwartz inequality. For the same atomic numbers, the regions that include violation of the Cauchy-Schwartz inequality will shift rightwards with the increment of the Rabi frequency, whereas for the same Rabi frequency, the regions will shift leftwards with the increment of the atomic numbers.

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Key words: spinor Bose-Einstein condensate, sub-Poissonian distribution, Cauchy-Schwartz inequality

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