Entangled three-particle states in magnetic field: Periodic correlations and density matrices

Amitabha Chakrabarti, Anirban Chakraborti

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Time evolutions of different types of entangled states of three spin-1/2 particles are studied in the presence of a constant, external magnetic field, which causes the individual spins to preces This leads to periodic correlations and density matrices. The emerging patterns of periodicity are studied explicitly and in detail for a particular initial configuration of the velocities. Contributio to precession of anomalous magnetic moments are implemented. More general results are also obtained. An electric field orthogonal to the magnetic field is introduced and linked to the preceding case via a suitable Lorentz transformation. The corresponding Wigner rotations of the spin states are obtained. The entangled states, corresponding to well-known ones in the stu of 3-particle entanglements are classified systematically using a particular coupling of three angular momenta presented in the Appendix.

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