

Revisit the spin effects by thermal vorticity

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We revisit the spin polarization effects induced by thermal vorticity by calculating them directly from the spin-dependent distribution functions. For the spin-1/2 particles, we find that the spin polarization from the acceleration relative to the vorticity is suppressed compared to the result derived from the mean spin polarization vector. For the spin-1 particles, we give the spin alignment in terms of acceleration and vorticity. Although the spin alignment receives only second-order contribution from acceleration or vorticity, we find that some non-diagonal elements in spin density matrix can receive first order contribution which can be detected in heavy-ion collisions.

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