

Abstract Submitted  
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**A Semiclassical Treatment of Spin Currents for Dirac Particles in Rotating Coordinates** ELIF YUNT, OMER FARUK DAYI, Istanbul Technical University — Spin currents for Dirac particles in the presence of external electromagnetic fields and global rotation in both two and three dimensions is presented. The particle distributions are derived using the Boltzmann transport equation with collision in the relaxation-time approximation. In the Boltzmann equation, we employ the matrix-valued semiclassical equations of motion established in [1]. Spin currents are calculated within this semiclassical method which is based on the wave packet composed of positive energy solutions of the Dirac equation. The Berry Curvature resulting from this wave packet contributes to the equations of motion. We comment on the pure spin current generation in three dimensions, which is a main focus in the field of spintronics, by calculating the spin current and particle number densities associated with holes (or antiparticles). [1] Ö. F. Dayi, E. Kiliçarslan and E. Yunt, arXiv: 1605.05451

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