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Angular Momentum of Multiply Quantised Vortices in Fermionic Superfluids ABHINAV PREM, University of Colorado, Boulder, SERGEJ MOROZ, Technical University of Munich, VICTOR GURARIE, LEO RADZIHOVSKY, University of Colorado, Boulder — We study vortex textures in weakly coupled s -wave fermionic superfluids at zero temperature. In the BCS limit, we find that for an axisymmetric multiply quantised vortex with vorticity $k > 1$ the angular momentum is significantly reduced from the value $L_z = \hbar k N / 2$, which naturally arises in the strongly-coupled BEC regime. This phenomenon is rooted in the presence of unpaired fermions in the BCS ground state of a superfluid with an axisymmetric multiply quantised vortex. The predicted deviation of the angular momentum can be understood from the spectral flow along the vortex sub-gap states.

Abhinav Prem
University of Colorado, Boulder

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