Quantum Physics is Weird (except when it isn't)
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Abstract: Classically, charged quantum particles in so-called axisymmetric magnetic fields display interesting, helical trajectories. Within these trajectories are drifting circular orbits whose radii shrink as the magnetic field strength increases. However, since quantum particles are small (very very small), their dynamics are governed by partial differential equations called Schrodinger equations. Thus, the behavior of such particles can be very difficult to predict, and it is often impossible to find exact solutions to these systems. In this talk, I will show that in the strong magnetic field limit, we can in fact derive an effective solution to the Schrodinger equation with axisymmetric fields. Furthermore, the effective solution will display the same behavior that we expect from classical dynamics, thus demonstrating that, sometimes, quantum physics isn't all that weird.

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