Canadian Association of Physicists
Association canadienne des physiciens et physiciennes

Contribution ID: **2355** Type: **Oral Competition (Graduate Student) / Compétition orale (Étudiant(e) du 2e ou 3e cycle)**

Modification of Landau levels and degeneracy due to a parallel linear electric field

Monday 11 June 2018 12:00 (15 minutes)

When a charged particle moves in a plane perpendicular to a constant magnetic field (z-direction) the discrete energy levels are called Landau levels. The energies resemble those of the harmonic oscillator with ω the cyclotron frequency ω_c. The energies are highly degenerate, with the degeneracy being independent of the energy. We now add a linear electric field parallel to the magnetic field above the plane and anti-parallel below the plane. This introduces a second frequency ω_z associated with oscillations along the z-direction. We show how the Landau levels get modified, but more crucially show that the degeneracy increases with energy, with critical jumps when ω_z/ω_c is a rational number.

Authors: AUDIN, Yann (Bishop's University); Prof. EDERY, Ariel

Presenter: AUDIN, Yann (Bishop's University)

Session Classification: M1-4 Quantum Theory (DTP) | Théorie quantique (DPT)

Track Classification: Theoretical Physics / Physique théorique (DTP-DPT)