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Density of States of Type-II Superconductors in High Magnetic Field and Low Temperatures[1] RENZO VILLAZON, OWEN LEHMER, JULIAN IRWIN, SASHA DUKAN, Goucher College, Baltimore, MD 21204 — In high magnetic fields and at low temperatures, electronic energies are quantized in the form of Landau levels. The inclusion of Landau level quantization in the superconducting pairing (both diagonal and off-diagonal) leads to gapless points on the Fermi surface. Within this theory, the density of states of a type-II superconductor in the range of magnetic fields $0.2B_{c2} < B < B_{c2}$ is calculated. The influence of disorder on the density of states is investigated for a range of impurity concentrations and scattering potential strengths. We compare our theoretical predictions to experimental results for superconductor YNi_2B_2C and find that our model is reliable at high magnetic fields but has limited applicability at lower fields.

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Renzo Villazon
Goucher College, Baltimore, MD 21204

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