

1108-35-406

Patricia Bauman and **Guanying Peng*** (penggg@ucmail.uc.edu). *Analysis of the Lawrence-Doniach model for layered superconductors in magnetic fields.* Preliminary report.

We analyze minimizers of the Lawrence-Doniach energy for layered superconductors occupying a bounded generalized cylinder. For an applied magnetic field $\vec{H}_{ex} = h_{ex}\vec{e}_3$ that is perpendicular to the layers with $|\ln \epsilon| \ll h_{ex} \ll \epsilon^{-2}$ as $\epsilon \rightarrow 0$, where ϵ is the reciprocal of the Ginzburg-Landau parameter, we prove an asymptotic formula for the minimum Lawrence-Doniach energy as ϵ and the interlayer distance s tend to zero. We establish comparison results between the minimum Lawrence-Doniach energy and the minimum 3D anisotropic Ginzburg-Landau energy. We also discuss some results on the minimum Lawrence-Doniach energy with the applied magnetic field in the regime $h_{ex} = O(|\ln \epsilon|)$. (Received January 19, 2015)