

M08T.3 - Electrons Escaping Metal

Problem

Assume that, to escape from a metal, an electron must impinge from the interior onto the surface with enough momentum to overcome the confining potential that holds the electrons in the metal. Also assume that all electrons with such a momentum do escape. Calculate the flux (number per area per time) of electrons escaping from a metal with work function ϕ (the barrier energy) at room temperature T . Treat the electrons as an ideal Fermi gas.