

Homework # 5, Classical Physics: Electrodynamics (4420)

Due Feb 14

1. Infinitely long charged wire with linear density λ is positioned some distance d from a dielectric with permittivity ε occupying the lower half-space (upper half-space, which contains the wire, is vacuum). Find the force acting on the wire (per unit length). What is the direction of this force? (Hint: using the image method reduce the problem to two interacting wires.) [5 point]

2. Problem 4.18 from Griffiths (p. 184) [5 points]