

Problem 4.62 Conducting wires above a conducting plane carry currents I_1 and I_2 in the directions shown in Fig. P4.62. Keeping in mind that the direction of a current is defined in terms of the movement of positive charges, what are the directions of the image currents corresponding to I_1 and I_2 ?

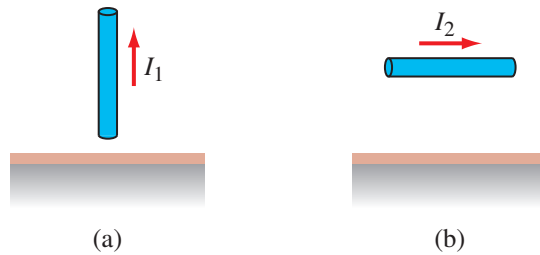


Figure P4.62: Currents above a conducting plane (Problem 4.62).

Solution:

(a) In the image current, movement of negative charges downward = movement of positive charges upward. Hence, image of I_1 is same as I_1 .

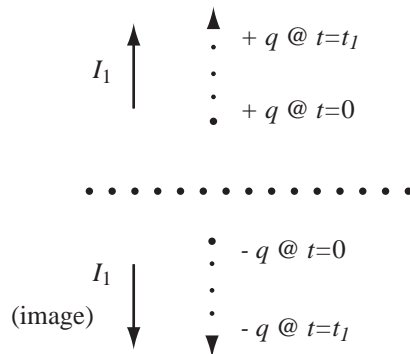


Figure P4.62(a): Solution for part (a).

(b) In the image current, movement of negative charges to right = movement of positive charges to left.

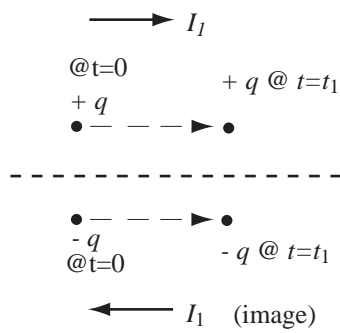


Figure P4.62(b): Solution for part (b).