

# Workbook



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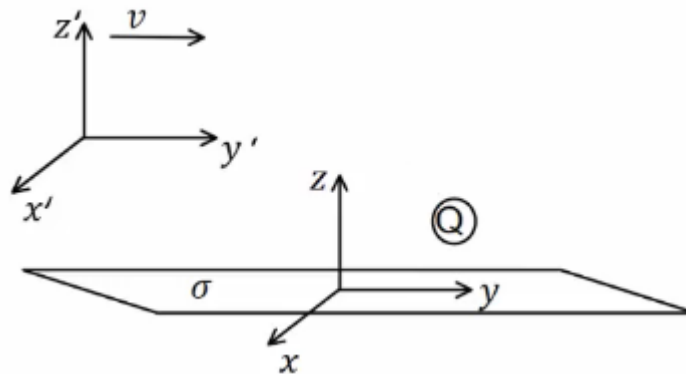
# Relativistic Transformations for Electric and Magnetic Fields

## Relativistic Transformations for Electric and Magnetic Fields

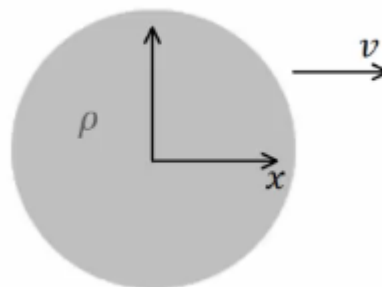
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### Questions

- 1) A charged particle  $Q$  is placed on an infinite plane of charge density per unit area  $\sigma$ . The charged plane is located on the  $x$ - $y$  plane. Find the force acting on the particle, relative to an observer moving with velocity  $v$  in the  $y$  direction. Assume that the particle is stationary relative to the plane.



- 2) A sphere has charge density per unit volume  $\rho$ . The sphere travels along the  $x$  axis with a velocity of  $v$ . Find the electric and magnetic fields inside the sphere relative to the lab, exactly when the center of the sphere passes the origin relative to the lab's reference frame.



\*For the solutions go see the videos