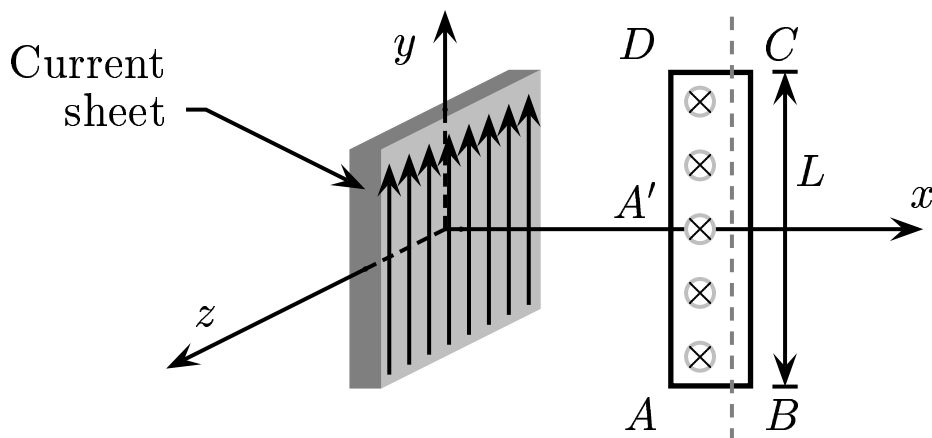


I is flowing along the positive y -axis in yz -plane at $x = 0$. The current direction is shown by arrows in the current sheet. At some instant after turning on I , the front of the \vec{B} field passes window $ABCD$ with speed v as shown in the figure.



Determine the direction of \vec{E} at A' .

- A) The direction of \vec{E} is \uparrow .
- B) The direction of \vec{E} is \rightarrow .
- C) The direction of \vec{E} is \downarrow .
- D) The direction of \vec{E} is \leftarrow .

Faraday's law: $\mathcal{E} = \oint \vec{E} \cdot \vec{ds} = -\frac{d\phi}{dt}$; $\mathcal{E} = EL$ and $\phi = BLx$. Faraday's

law implies that the induced emf is out of the window, or the induced field

\vec{E} is along AD , *i.e.* it is down.

Answer **C**.

30.03-06 Field Due To Current Sheet 2004-3-24