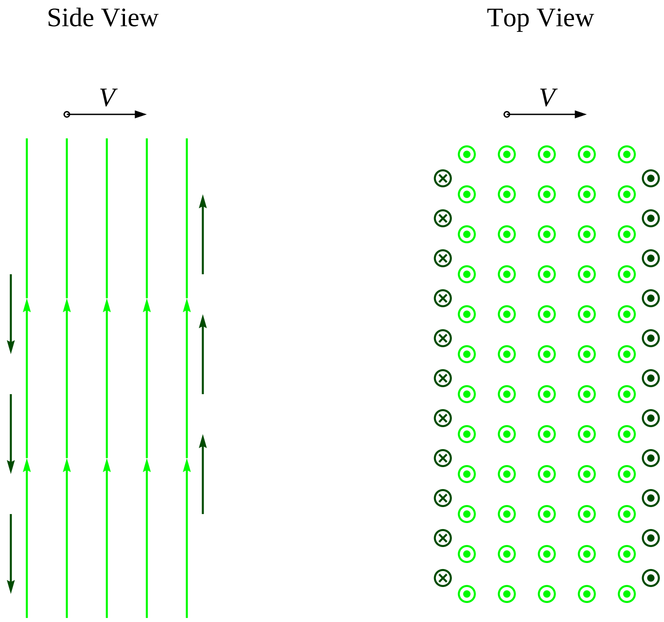
A changing magnetic field makes an electric field. A changing electric field makes a magnetic field.

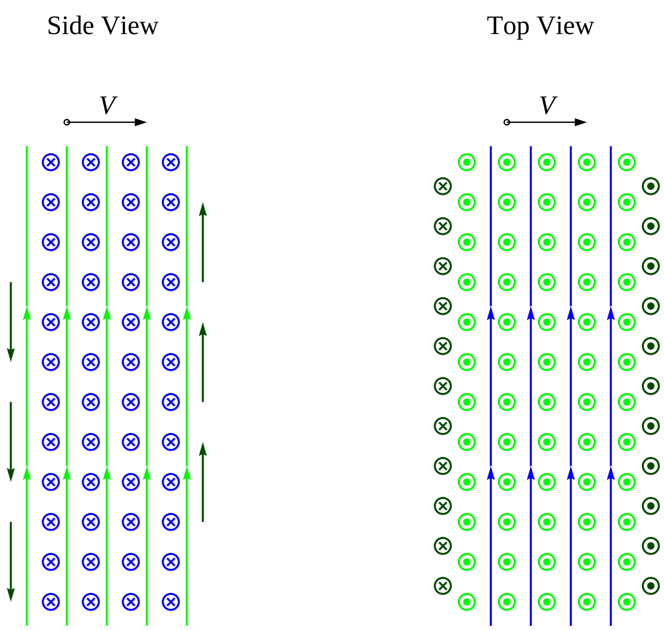
These phenomena are expressed mathematically through the Faraday law and the Ampere-Maxwell law:

$$\oint \vec{E}\cdot d\vec{\ell} = -\frac{d\Phi_B}{dt} \qquad \text{and} \qquad \oint \vec{B}\cdot d\vec{\ell} = \mu_0\epsilon_0 \frac{d\Phi_E}{dt} \tag{1}$$

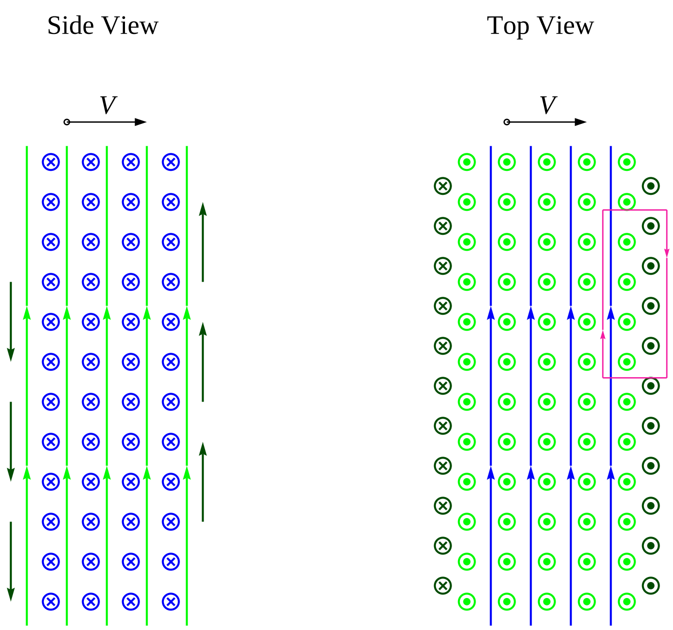
As an example, consider an infinite slab of uniform magnetic field moving right at velocity V. (For now, don't ask what the source of this $\vec{B}$ is.) If you imagine standing still as this slab of $\vec{B}$ washes over you, you will realize that the front of the slab is accompanied by $d\vec{B}/dt$ pointing upward, and that the rear is accompanied by $d\vec{B}/dt$ pointing downward. (As usual, $\vec{B}$ is represented by green, and $d\vec{B}/dt$ by dirty green.)



As Faraday discovered, this $d\vec{B}/dt$ is the source of $\vec{E}$, which in this case is internal to the slab. Its qualitative character can be determined (compare the homework problem of finding $\vec{B}$ due to “infinite sheets of current”) by the “anti-right-hand rule”, which shows an electric field as sketched here (as usual, $\vec{E}$ is represented by blue):



To find this field's magnitude, apply Faraday's law to the purple loop below:

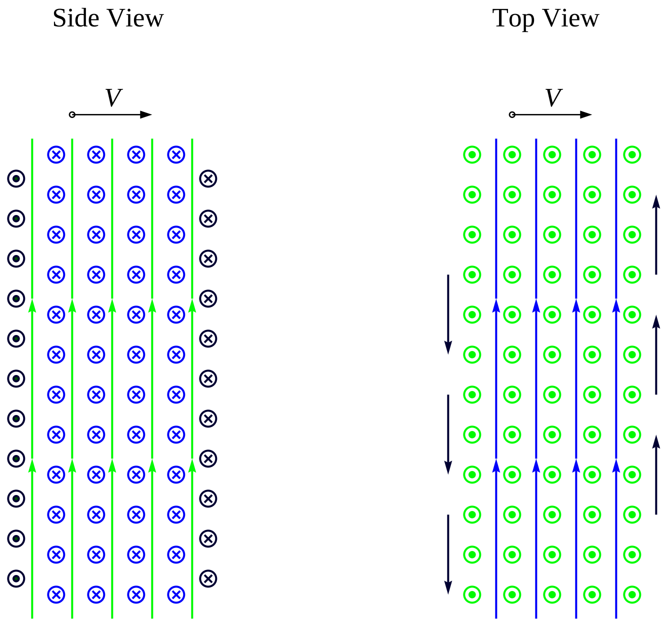


We find

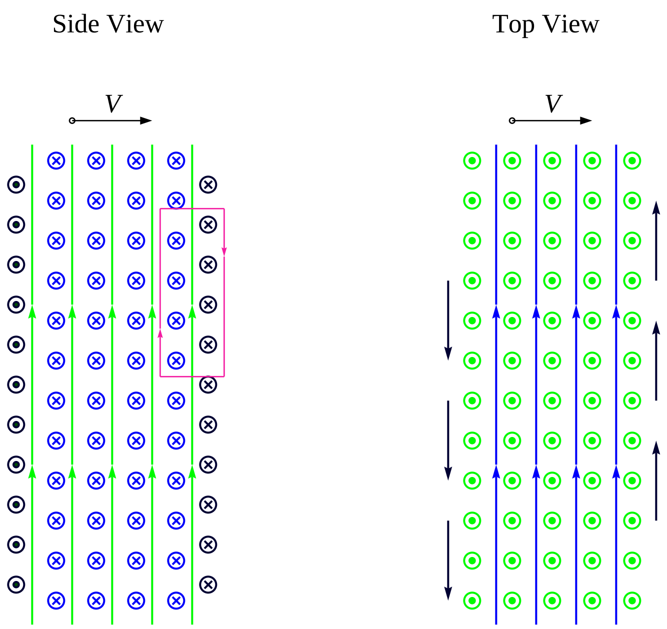
$$\oint \vec{E} \cdot d\vec{\ell} = -\frac{d\Phi_B}{dt}$$
$$|\vec{E}|(\text{height of loop}) = |\vec{B}|V(\text{height of loop})$$
$$|\vec{E}| = |\vec{B}|V \quad (2)$$

(This makes perfectly good sense: the $\vec{E}$ is caused by changing $\vec{B}$, so if there's more magnitude of $\vec{B}$, there's more magnitude of $\vec{E}$, and if there's more change through a larger V, there's again more magnitude of $\vec{E}$.)

Now of course, this moving slab of $\vec{E}$ has a $d\vec{E}/dt$ at its front and rear edges (the figure below shows the $d\vec{E}/dt$ —represented in dirty blue — but to avoid clutter it doesn't show the $d\vec{B}/dt$):



As Maxwell showed, this $d\vec{E}/dt$ generates magnetic field. This is the source of the original $\vec{B}$! To find its magnitude, apply the Ampere-Maxwell law to the purple loop below:



We find

$$\begin{aligned} \oint \vec{B} \cdot d\vec{\ell} &= \mu_0 \epsilon_0 \frac{d\Phi_E}{dt} \\ |\vec{B}|(\text{height of loop}) &= \mu_0 \epsilon_0 |\vec{E}| V (\text{height of loop}) \\ |\vec{B}| &= \mu_0 \epsilon_0 |\vec{E}| V \end{aligned} \tag{3}$$

Putting together equations (2) and (3), we discover that

$$V = \frac{1}{\sqrt{\mu_0 \epsilon_0}}. \tag{4}$$