

$$\mathcal{E} = \frac{\Delta \Phi_{\text{tot}}}{\Delta t} = N \cdot \frac{\Delta \Phi_1}{\Delta t}$$

$$\Phi_1 = \int \vec{B} \cdot d\vec{A}$$

\uparrow
 $B_0(r) \sin(\omega t + \phi)$

$$\mathcal{E} = N \frac{d}{dt} \sin(\omega t + \phi) \int \vec{B}_0 \cdot d\vec{A}$$

$$\boxed{\mathcal{E} = N \omega \cos(\omega t + \phi) \cdot \int \vec{B}_0 \cdot d\vec{A}}$$

