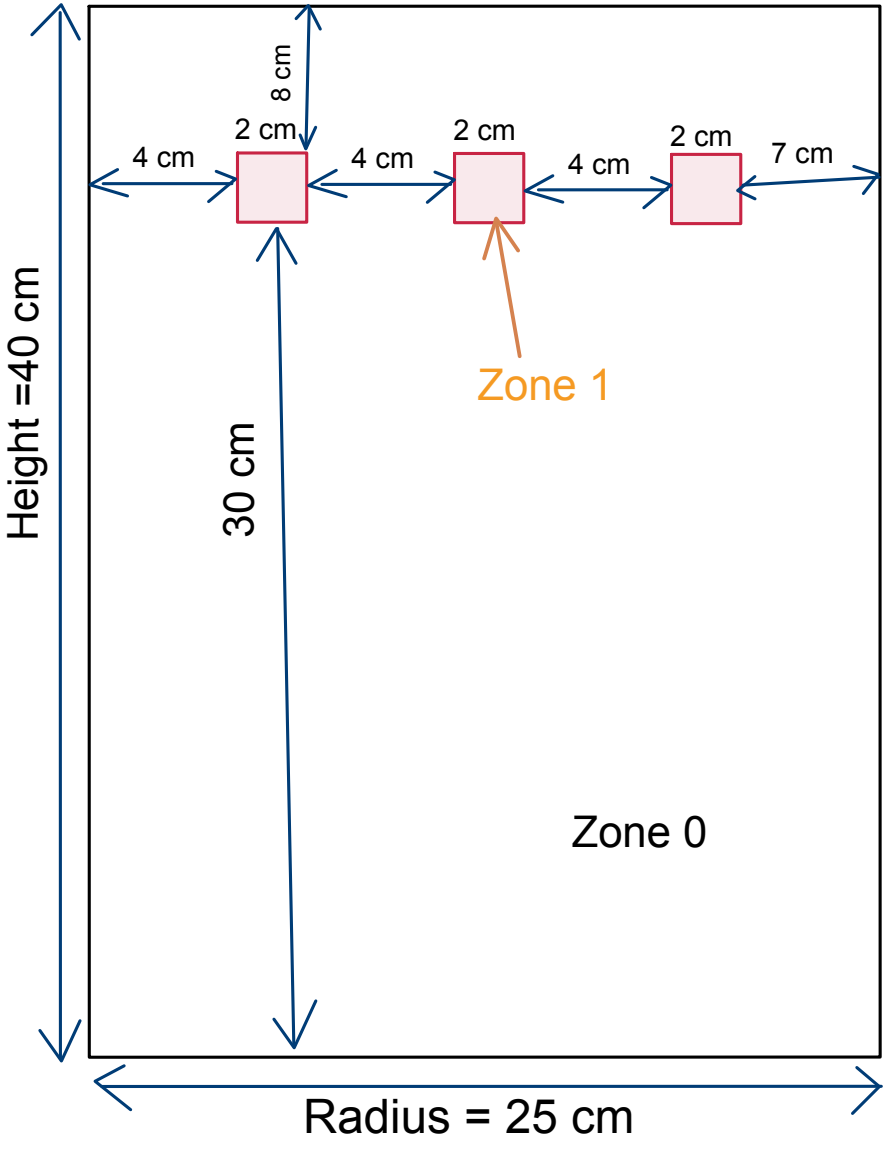
Case 1

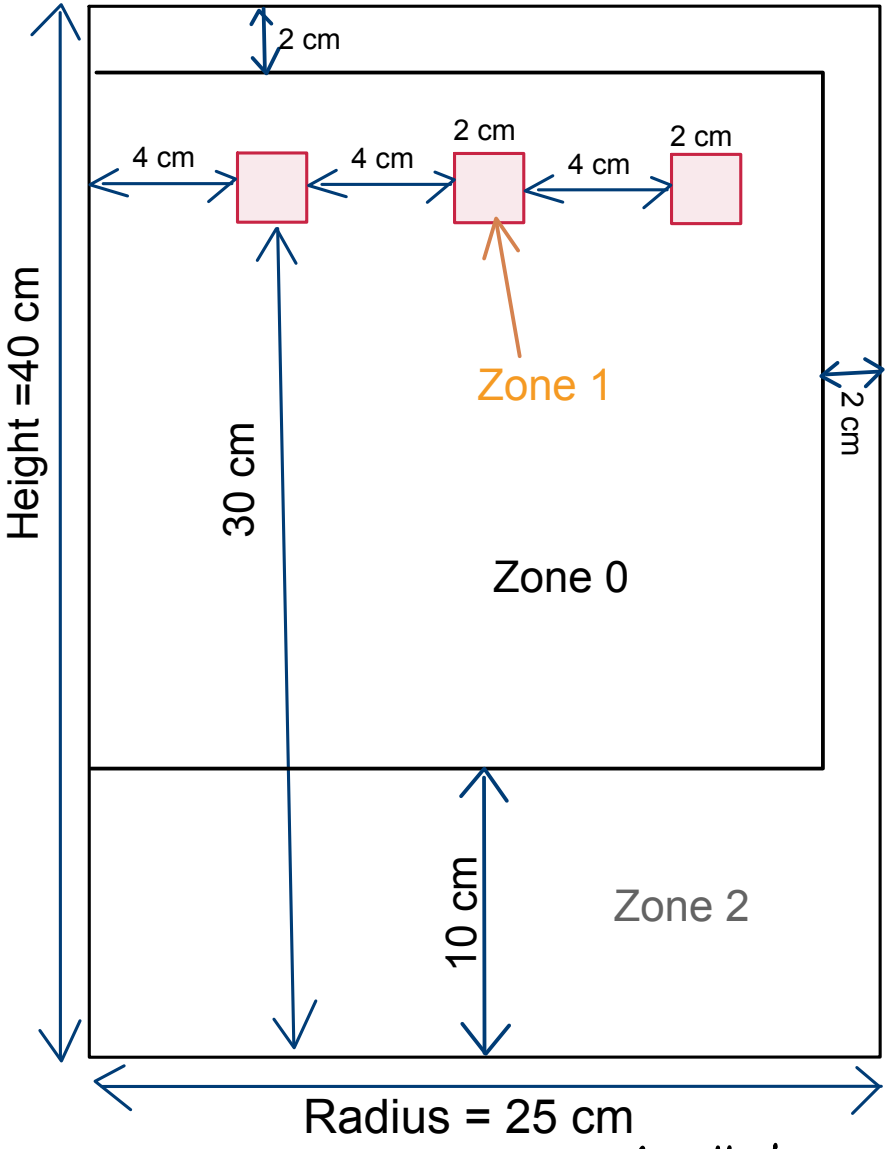


Zone 0 Vac $\nabla A = 0$

Zone 1 Coil $\nabla A = J$, $J = I/\text{area}$, $I = 1\ A$, area = 2 cm × 2cm

At all b.c. $A = 0$

Case 2



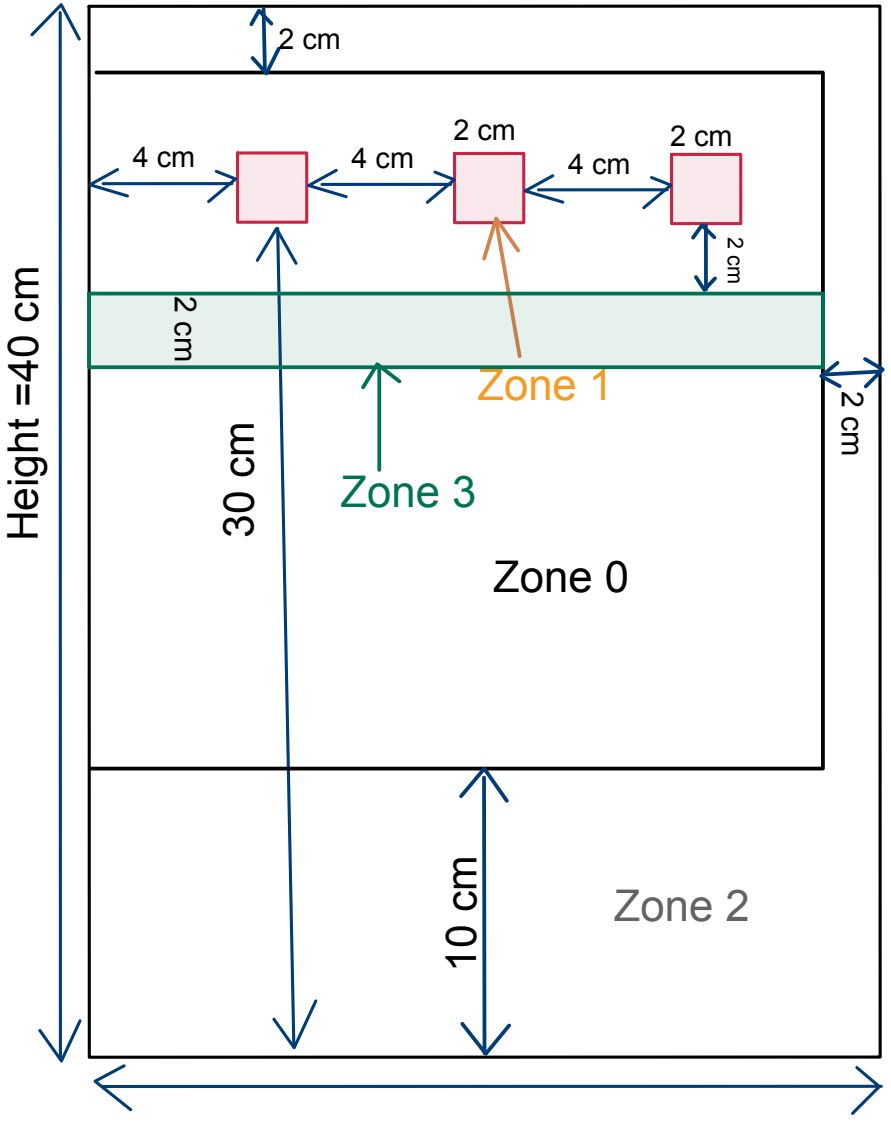
Zone 0 Vac $\nabla A = 0$

Zone 1 Coil $\nabla A = J$, $J = 1/\text{area}$, $I = 1$ A, area = 2 cm × 2

Zone 2 Metal $A = 0$

At all b.c. $A = 0$

Case 3



Zone 3 Dielectric
A is continuous at the interface

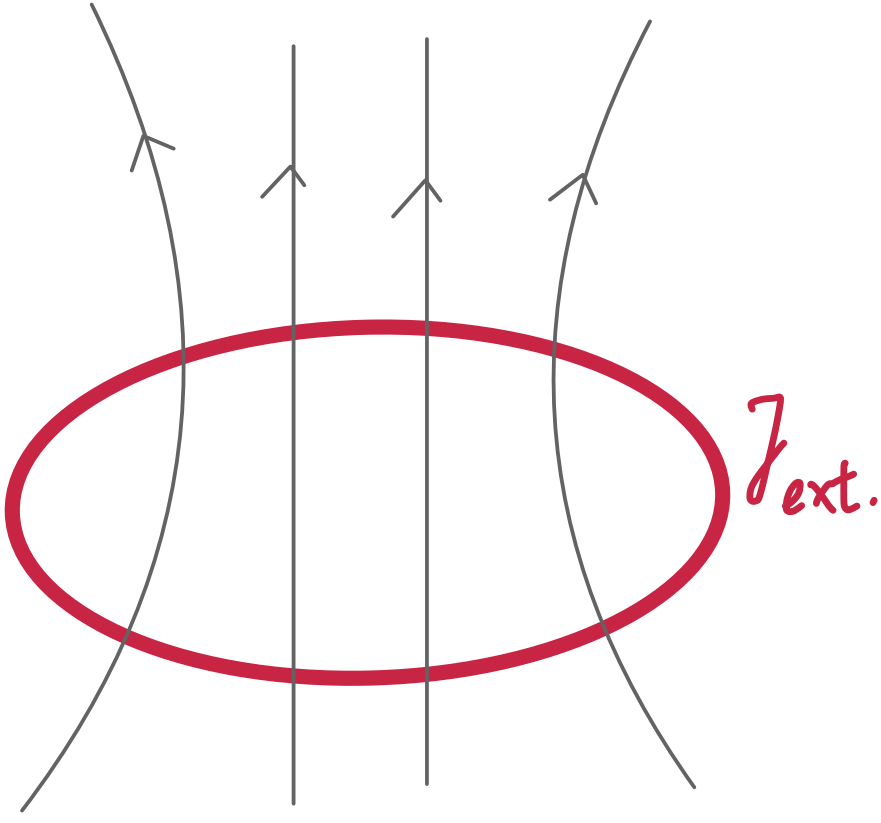
σ is a tuning parameter

$\nabla A = J_{induced}$, $J_{induced} = \sigma E$

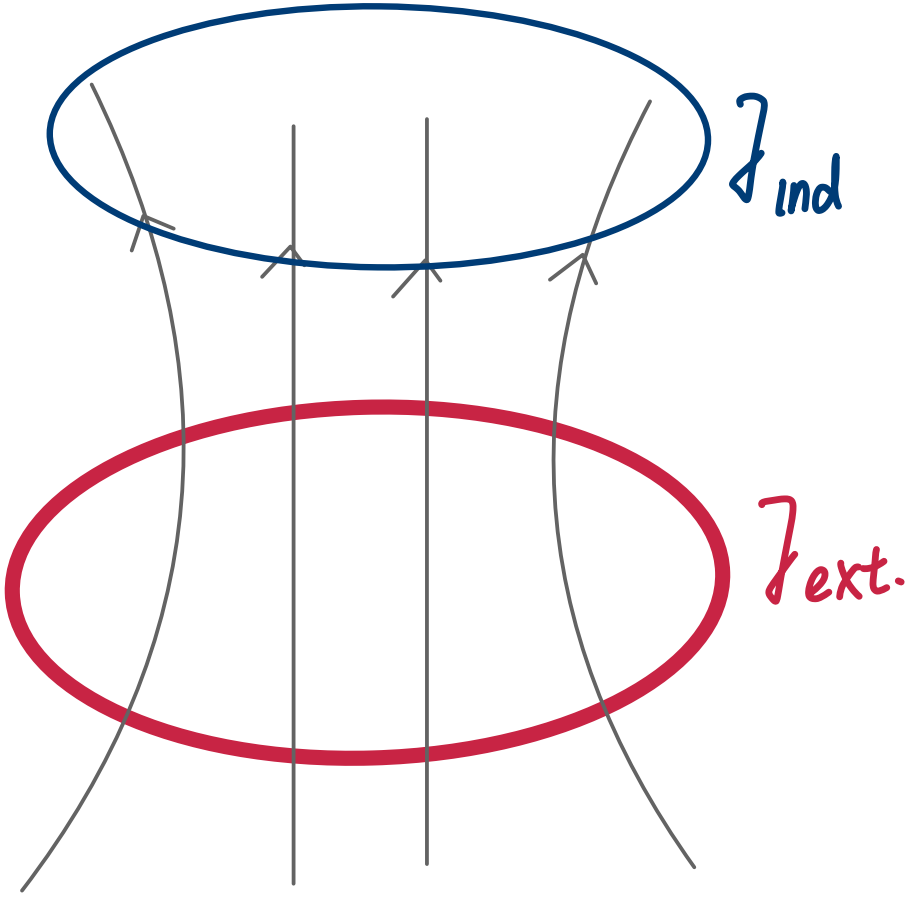
$E = i\omega A$ $J_{induced} = i\omega\sigma A$

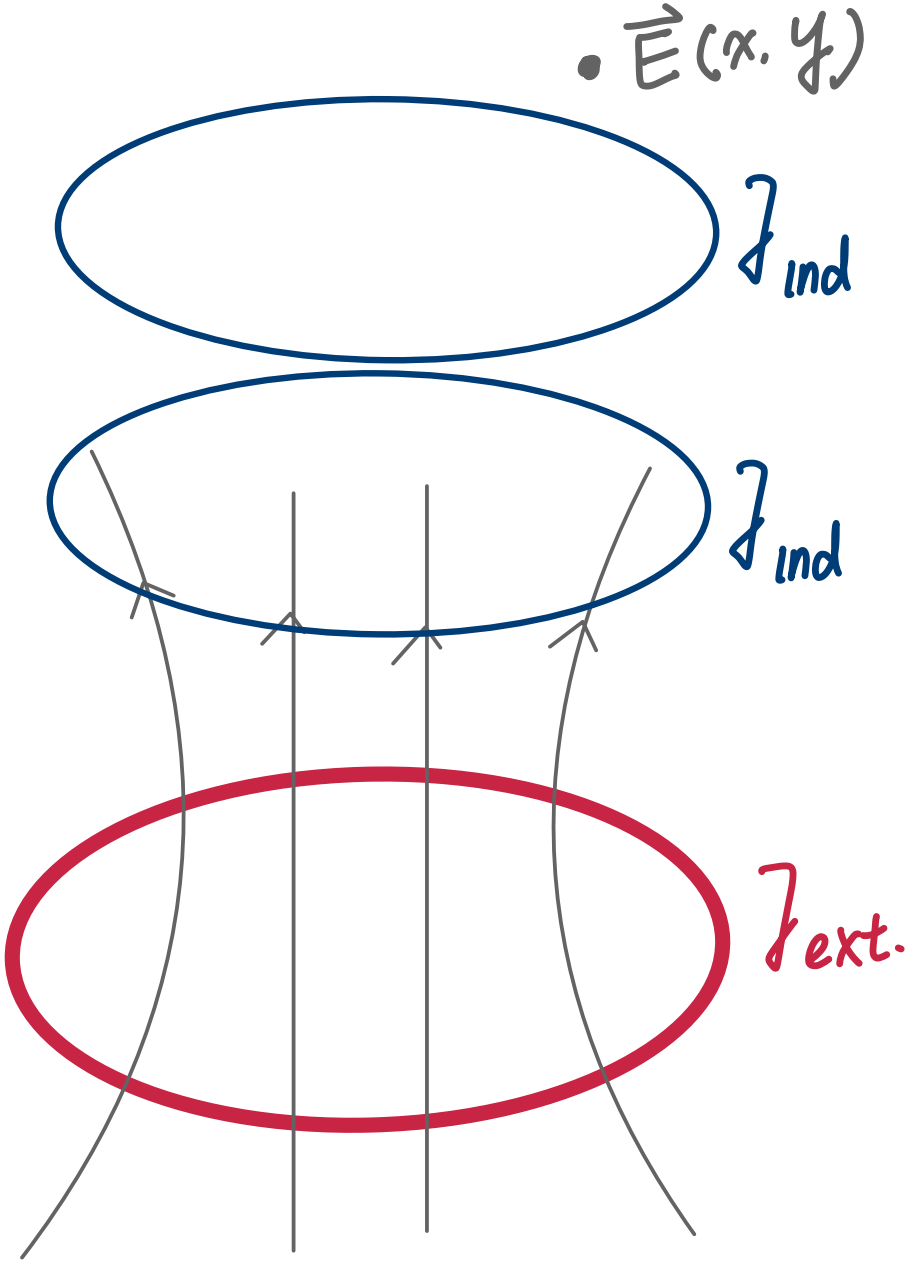
$$\nabla A = i\omega\sigma A$$

• $\vec{E}(x, y)$



• $\vec{E}(x, y)$




$\vec{E}(x, y)$
J_{ind}
J_{ind}
$J_{ext.}$