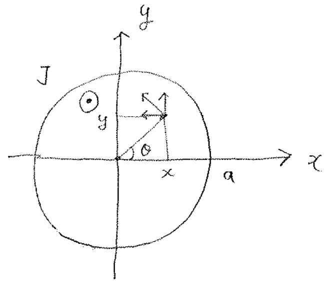
No.
Date

II



(1) $r \geq a$ のとき $H_a \cdot 2\pi r = \pi a^2 J$

$H_a = \dfrac{a^2 J}{2r}$ //

$0 \leq r < a$ のとき $H_a \cdot 2\pi r = \pi r^2 J$

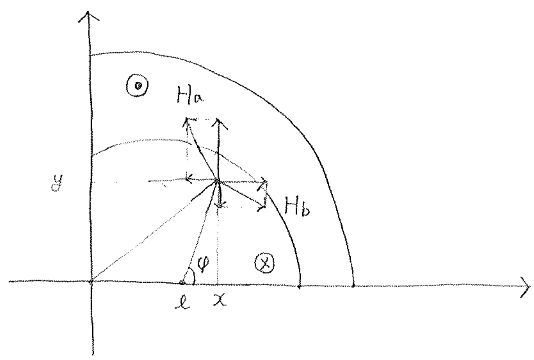
$H_a = \dfrac{rJ}{2}$ //

導体内より $H_a = \dfrac{\sqrt{x^2+y^2}\,J}{2}$

$\therefore \quad H_{ax} = \dfrac{\sqrt{x^2+y^2}\,J}{2} \cdot -\sin\theta = \dfrac{\sqrt{x^2+y^2}\,J}{2} \cdot -\dfrac{y}{\sqrt{x^2+y^2}} = -\dfrac{yJ}{2}$ //

$H_{ay} = \dfrac{\sqrt{x^2+y^2}\,J}{2} \cdot \cos\theta = \dfrac{\sqrt{x^2+y^2}\,J}{2} \cdot \dfrac{x}{\sqrt{x^2+y^2}} = \dfrac{xJ}{2}$ //

(2)



H_{ax}, H_{ay} は (1) より

$H_{ax} = -\dfrac{yJ}{2}, \quad H_{ay} = \dfrac{xJ}{2}$

ここで H_b は $H_b \cdot 2\pi r = \pi r^2 (-J)$

$H_b = -\dfrac{rJ}{2} = -\dfrac{\sqrt{(x-l)^2+y^2}\,J}{2}$

$H_{bx} = H_b \cdot -\sin\varphi = -\dfrac{\sqrt{(x-l)^2+y^2}\,J}{2} \cdot -\dfrac{y}{\sqrt{(x-l)^2+y^2}} = \dfrac{yJ}{2}$

$H_{by} = H_b \cdot \cos\varphi = -\dfrac{\sqrt{(x-l)^2+y^2}\,J}{2} \cdot \dfrac{x-l}{\sqrt{(x-l)^2+y^2}} = -\dfrac{x-l}{2}J$

$$\begin{cases} H_x = -\dfrac{y}{2}J + \dfrac{y}{2}J = 0 \\ H_y = \dfrac{x}{2}J - \dfrac{x-l}{2}J = \dfrac{x-x+l}{2}J = \dfrac{l}{2}J \end{cases}$$ //

空間的に y方向に $\dfrac{l}{2}J$ の一様な磁界となっている。//