



$$E 2\pi r^2 = \frac{q_{enc}}{\epsilon_0}$$

$$dq = \pi r^2 a z dz$$

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$$\int_0^T a z dz \pi r^2 = \frac{1}{2} a z^2 \pi r^2 \Big|_0^T$$

$$E 2\pi r^2 = \frac{a T^2 \pi r^2}{\epsilon_0}$$

$$E = \frac{a T^2}{4 \epsilon_0}$$

where T is the thickness