Answer on Question #74652, Physics / Electric Circuits

The radius of the wire in a coaxial cable is .65mm and the inner radius of the coaxial conducting cylinder is 1.45mm assuming that there is vacuum between the wire and cylinder calculate the capacitance of a 1.5m length of cable

Solution.

$$C = \frac{2 \cdot \pi \cdot \xi \cdot \xi_0 \cdot l}{\ln(R_2/R_1)}$$

$$C = \frac{2 \cdot 3{,}14 \cdot 1 \cdot 8{,}85 \cdot 10^{-12} \cdot 1{,}5}{\ln(1.45/0.65)} = 104\ pF$$

Answer: $C = 104\ pF$