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This is a problem involving uniform circular motion.

A charged particle moves in a circular path in a magnetic field, with a radial acceleration of $2.5 \times 10^{14} \text{ m/s}^2$. If the circular path has a radius of 14 cm , what is its speed?

Solution: Use the centripetal acceleration equation: $a = \frac{v^2}{r}$

$$a = 2.5 \times 10^{14} \text{ m/s}^2 \text{ (magnitude of centripetal acceleration)}$$

$v = ?$ (speed of the charged particle, which is the same as its ^{velocity} magnitude)

$$r = 14 \text{ cm} = 0.14 \text{ m (radius of circular path)}$$

$$\text{Substitute: } 2.5 \times 10^{14} = \frac{v^2}{0.14}$$

$$v = 5.9 \times 10^6 \text{ m/s (answer)}$$