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This is a problem involving uniform circular motion.

A high speed train goes around a curve at a speed of 250 km/h. What is the smallest radius of curvature of the track so that the maximum acceleration experienced by the passengers is 0.05 g ?

Solution:

Since $g = 9.8\ m/s^2$ (acceleration due to gravity)

then, $a = 0.05g = 0.49\ m/s^2$ (maximum passenger acceleration)

Now, $v = 250\ km/h \times \frac{1000\ m}{1\ km} \times \frac{1\ h}{3600\ s} = 69.44\ m/s$ (train speed)

Use the centripetal acceleration equation:

$$a = \frac{v^2}{r}$$ (magnitude of centripetal acceleration)

Substitute:

$$0.49 = \frac{(69.44)^2}{r}, \quad r = 9840\ m$$ (answer) (smallest radius of curvature)