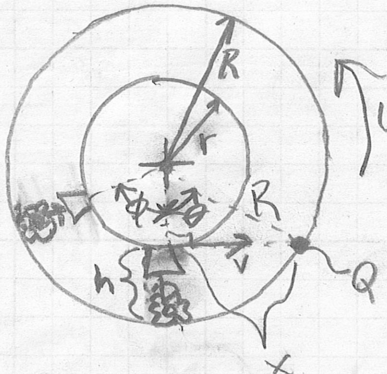
assuming constant rotational velocity ω and plant vomits hotdogs from innermost point:



$$R = r + h$$

assume all heights are equal, plants equally spaced, N plants.

$$R^2 = r^2 + x^2$$

$$V_h = \omega \cdot r \qquad x = \sqrt{R^2 - r^2}$$

$$R^2 = r^2 + rh + h^2$$

time for hotdogs to reach Q:

$$t_h = \frac{x}{V_h} = \frac{\sqrt{R^2 - r^2}}{\omega \cdot r} = \frac{\sqrt{rh + h^2}}{\omega r}$$

angle between plants:

$$\phi = \frac{2\pi}{N}$$

angle before hotdogs escape plant height:

$$\cos\theta = \frac{r}{R} \rightarrow \theta = \cos^{-1}\left(\frac{r}{R}\right)$$

angle next plant travels to reach Q:

$$\beta = \phi + \theta = \frac{2\pi}{N} + \cos^{-1}\left(\frac{r}{r+h}\right)$$

time for next plant to reach Q:

$$t_p = \frac{\beta}{\omega} = \frac{2\pi}{N\omega} + \frac{\cos^{-1}\left(\frac{r}{r+h}\right)}{\omega}$$

criteria for no collision:

$$t_n < t_p$$

$$\frac{\sqrt{rh - h^2}}{\omega r} < \frac{\frac{2\pi}{N} + \cos^{-1}\left(\frac{r}{r+h}\right)}{\omega}$$

$$\frac{\sqrt{rh - h^2}}{r} < \frac{2\pi}{N} + \cos^{-1}\left(\frac{r}{r+h}\right)$$