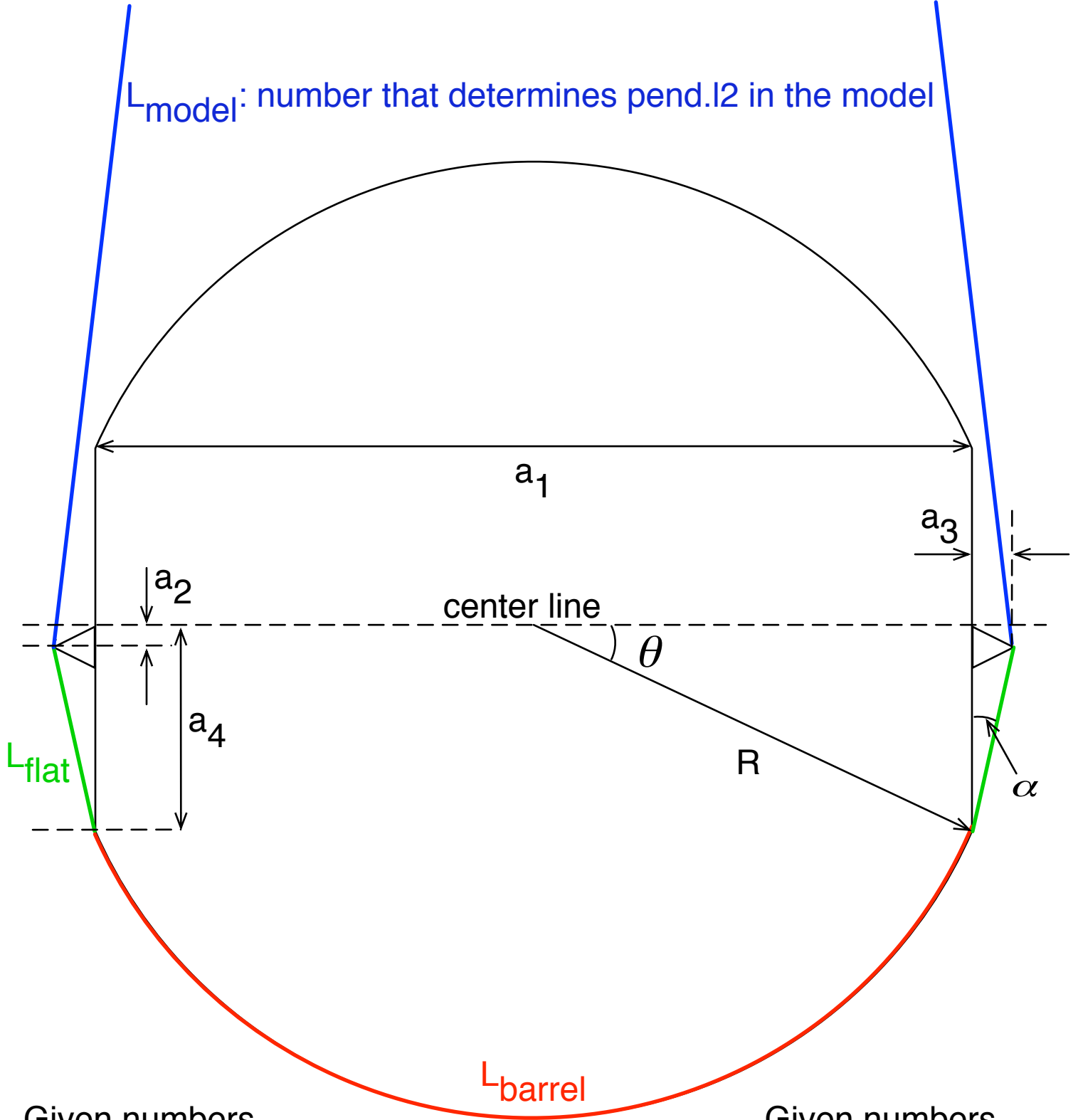


# Estimation of the wire length between the UIM and PUM prism



Given numbers

$$a_1 = 326.5 \text{ mm}$$

$$a_2 = 2.6 \text{ mm}$$

$$a_3 = 14.2 \text{ mm}$$

Given numbers

$$R = 170 \text{ mm}$$

$$L = L_{\text{barrel}} + 2L_{\text{flat}} + 2L_{\text{model}} =$$

$$1207.2 \text{ mm}$$

Finding  $L_{barrel}$  around the barrel

$$\theta = \cos^{-1} \left( \frac{a_1}{2R} \right) = 0.283 = 16.2^\circ$$

$$L_{barrel} = (\pi - 2\theta) R = 437.9 \text{ mm}$$

Finding  $a_4$  between the center line and bottom of the flat

$$a_4 = R \sin \theta = 47.43 \text{ mm}$$

Finding  $L_{flat}$  between the barrel and the prism

$$L_{flat} = \sqrt{(a_4 - a_2)^2 + a_3^2} = 47.02 \text{ mm}$$

Finding  $L_{model}$ , the remaining wire length

$$L_{model} = \frac{1}{2} (L - L_{barrel} - 2L_{flat}) = 337.6 \text{ mm}$$

References:

PUM assembly: D0902823

PUM: D080117

Prism: D080479

Wire loop: D060516