

# Rotary Centering Scan

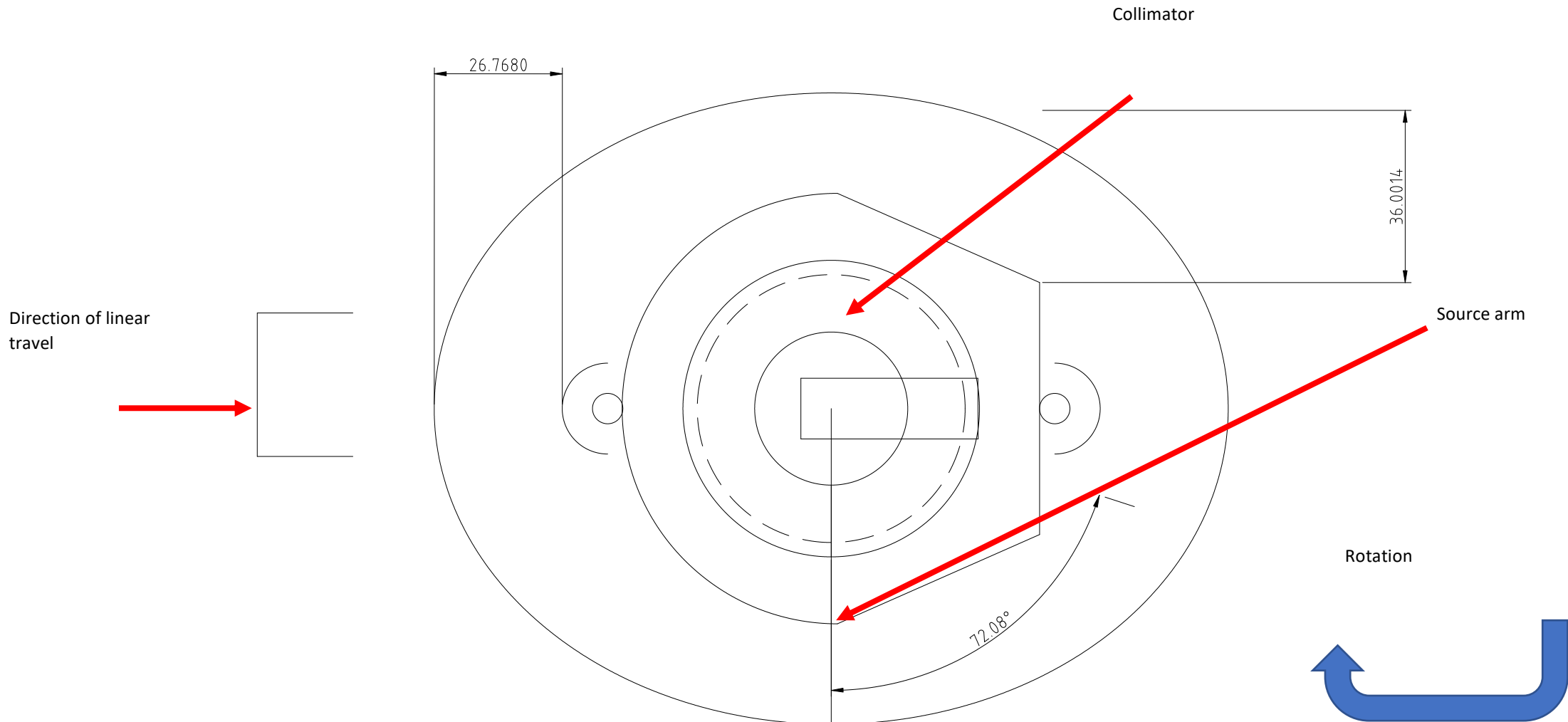
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8 March 2021

# Overview

- Making a plan for rotary centering scans to help find the uncertainty in rotary angle position

# 72 Degree rotation

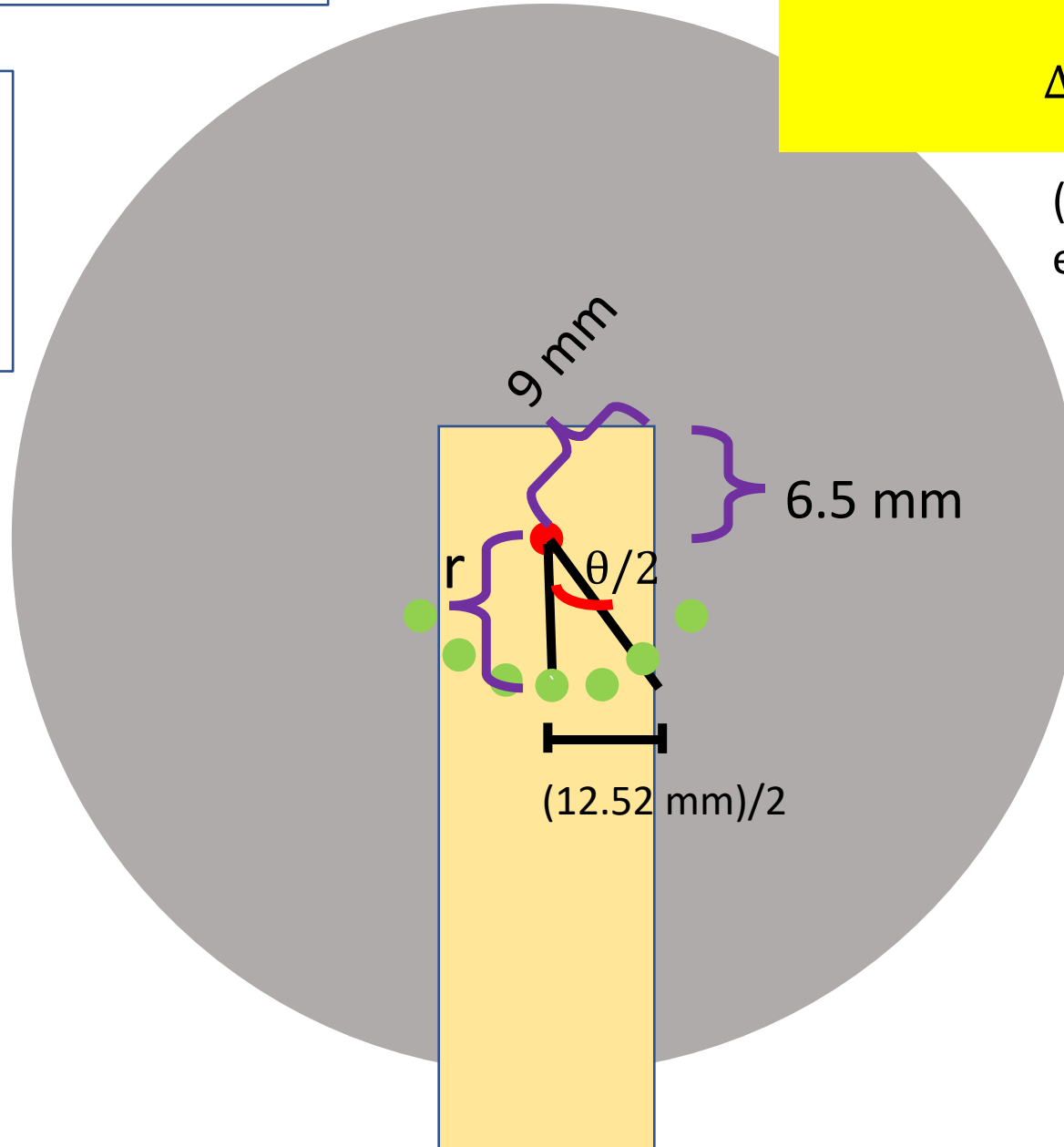


Taken from ./topview.pptx

# Rotary motor at -72.08 deg

Determining the angle,  $\Theta$ , that needs to be traversed for rotary centering scans

Linear travel



$$\Theta = 2 * \tan^{-1} (12.52/2)[mm] / r [mm]$$

$$\Delta\theta = \frac{\Delta S}{r} = \frac{2 [mm]}{r [mm]}$$

(S = 2 mm if we want a spot every 2 mm)

For r = 12 mm:

$$\Theta = 55^\circ$$

$$\Delta\theta = 10^\circ$$

● = beam spot position

Rotation



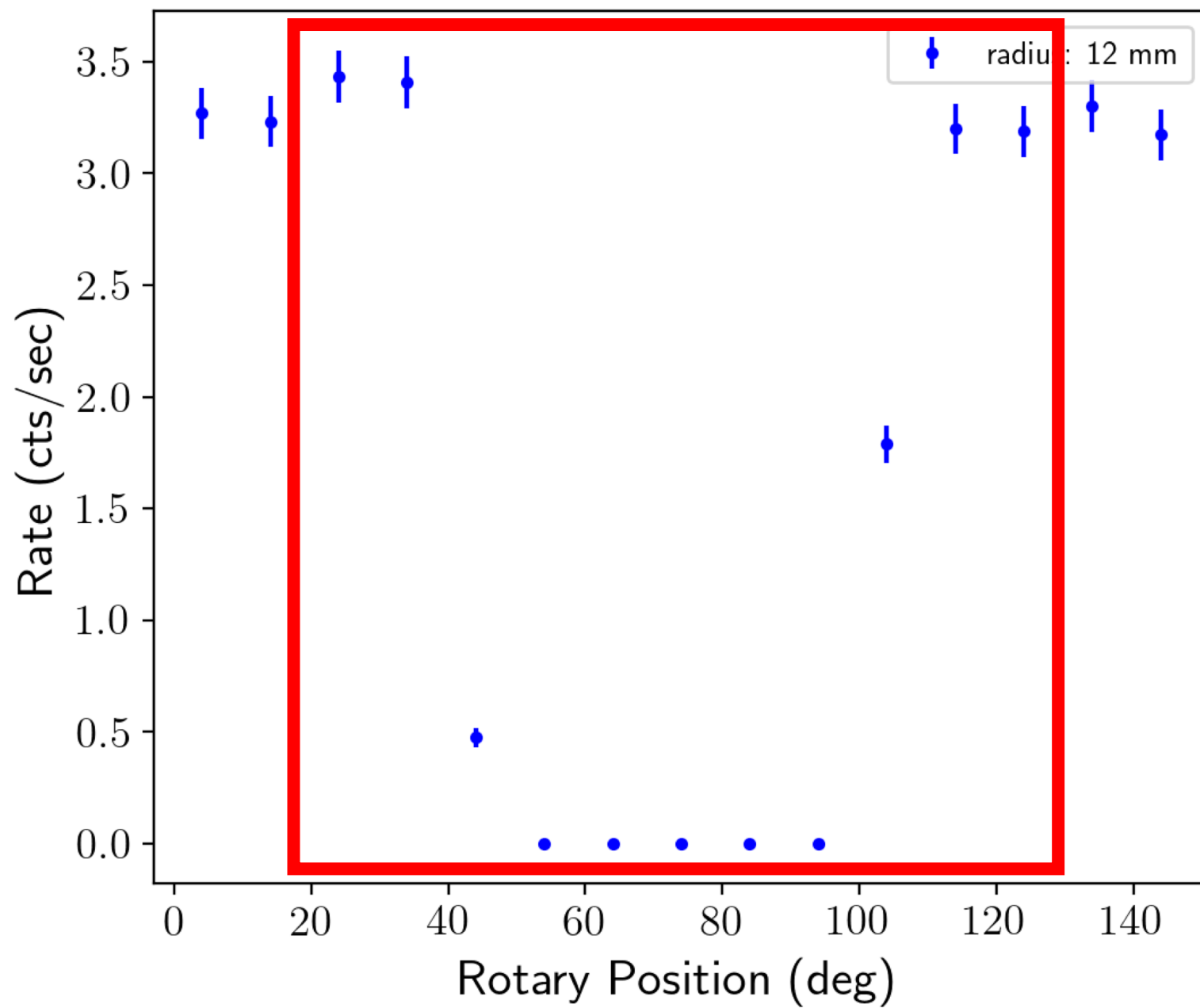
# Proposal

- “center” point for this scan is rotary = -72.08 deg
- Upper limit:  $72.08 + \theta/2 + 2 \cdot \Delta\theta = 119.6 \rightarrow 120 \text{ deg}$
- Lower limit:  $72.08 - \theta/2 - 2 \cdot \Delta\theta = 24.5 \text{ deg} \rightarrow 24 \text{ deg}$
- Try to get scan every  $\sim 2 \text{ mm}$  arc length  $\rightarrow \sim d_\theta = 10 \text{ deg}$
- **Final proposal: -24 deg to -124 deg in 10 deg increments**
  - **11 scan positions**
  - **I estimate about 8 hours of lab time with 30 min run + 15 min in between to move motors**

# Other notes

- Spot should start overlapping with front-end at rotary = -44.5 deg and overlap until rotary = -100 deg

Rate for 5 to 6 MeV



Rate for 0.05 to 0.07 MeV

