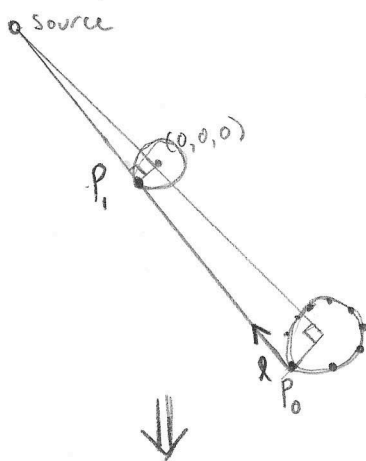


## Reconstructor:

1. using angles and contour points convert coordinates from  $(u, v, 0)$  to  $(x, y, z)$

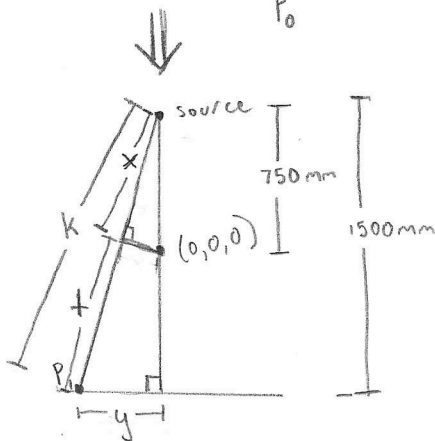
$$\begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} \cos(\alpha) & \sin(\alpha) & 0 \\ -\sin(\alpha) & \cos(\alpha) & 0 \\ 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} 1 & 0 & 0 \\ 0 & \cos(\beta) & \sin(\beta) \\ 0 & -\sin(\beta) & \cos(\beta) \end{bmatrix} \left( \begin{bmatrix} 1 & 0 & 0 \\ 0 & 0 & 1 \\ 0 & 1 & 0 \end{bmatrix} \begin{bmatrix} u \\ v \\ 0 \end{bmatrix} + \begin{bmatrix} 0 \\ -750 \\ 0 \end{bmatrix} \right)$$

2. rotate source point about beam isocenter and find the direction vector from each image point to the source.



- need to find coordinates of  $P_1$

$$P_1 = P_0 + t\mathbf{l}$$



These 2 triangles are similar so we can use the dimensions of the larger triangle to find  $x$  and then  $t$

$$y = |P_1 - (0, -750, 0)|$$

$$k = \sqrt{1500^2 + y^2}$$

$$\frac{x}{750} = \frac{1500}{k}$$

$$x = \frac{1500(750)}{k}$$

$$t = k - x$$

Repeat this process for every point in the contour, for every contour in the list

Create a surface model using the delaunay triangulation