

PoPLaR

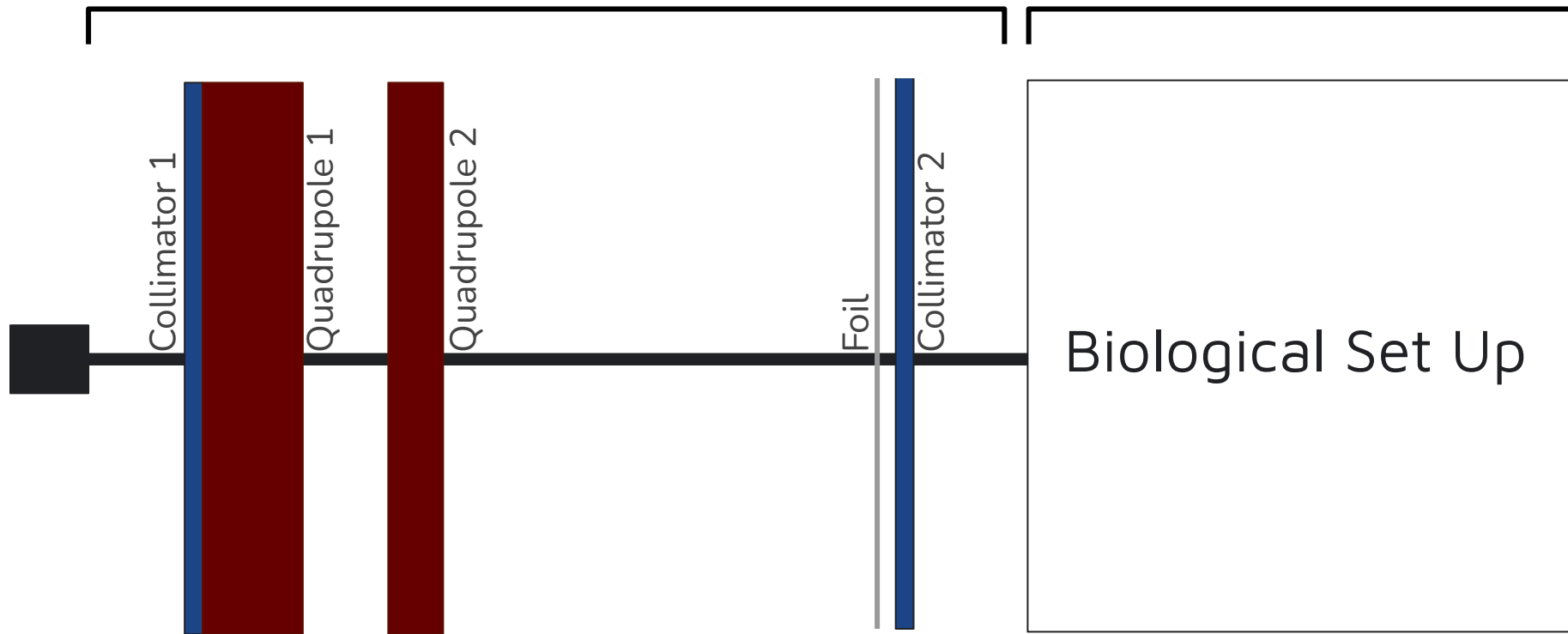
Linear Optics Update 13/06/2024



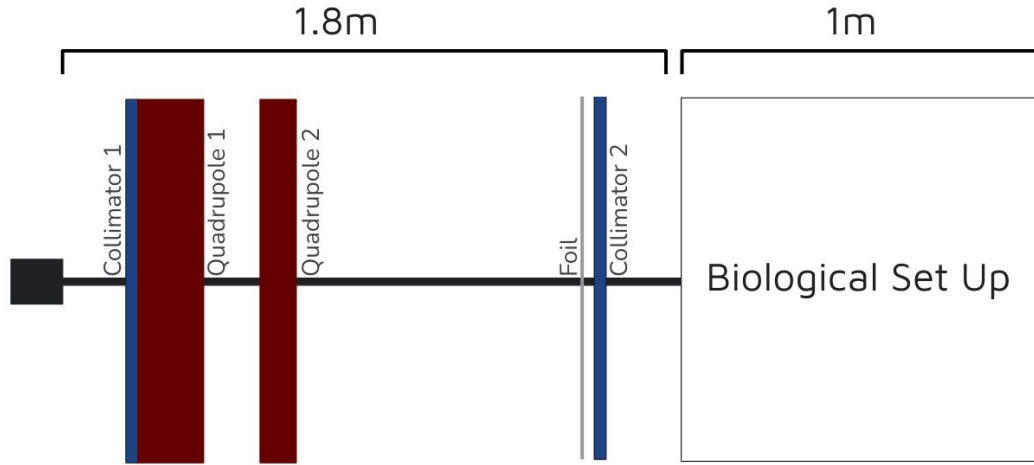
PoPLaR Set-Up

1.8m

1m



PoPLaR Set-Up



Issues with the 2 quad set up:

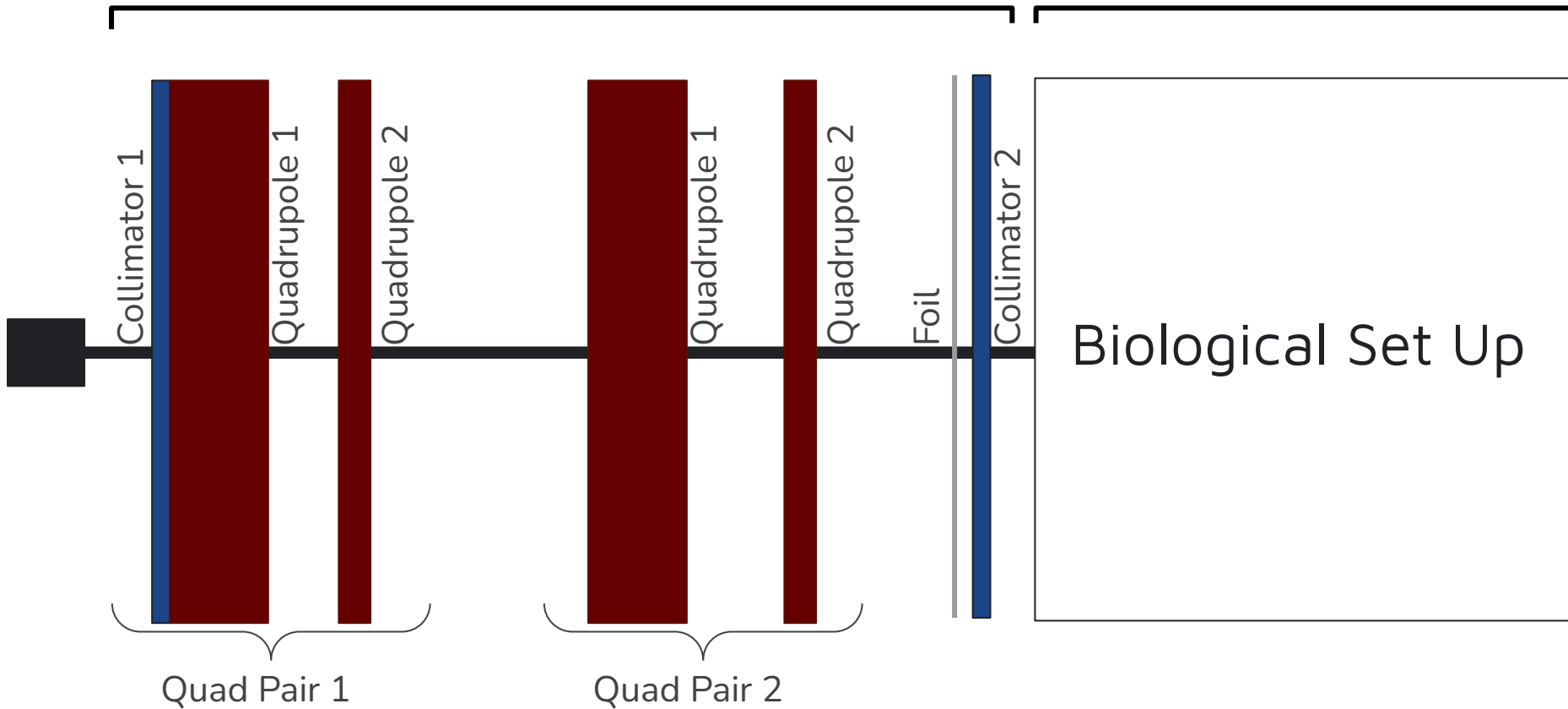
For stronger quads- cannot focus within 1.8m without being too close to the laser source

For weaker quads- spot size too small, transmission low

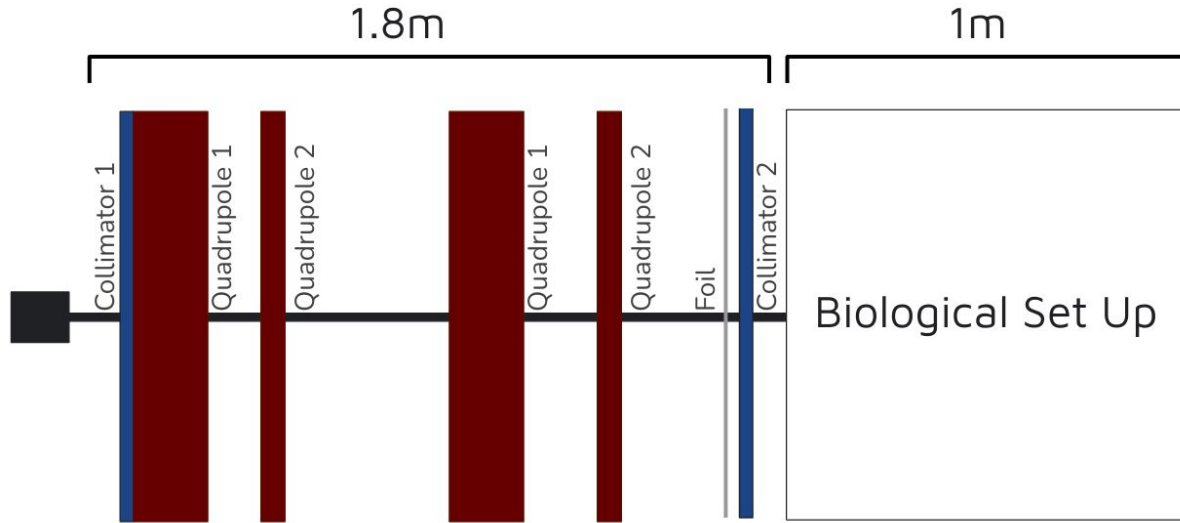
New PoPLaR Set-Up

1.8m

1m



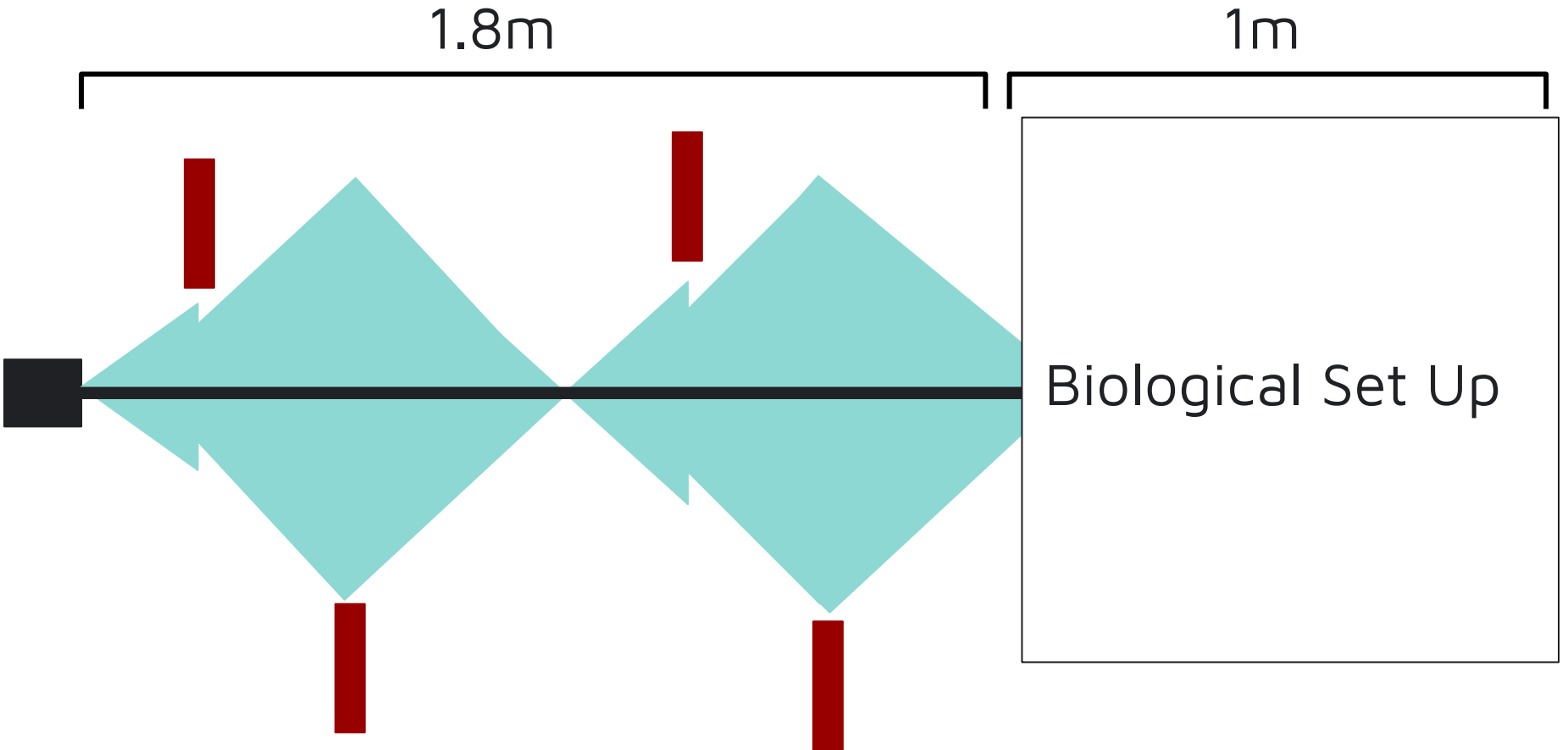
New PoPLaR Set-Up



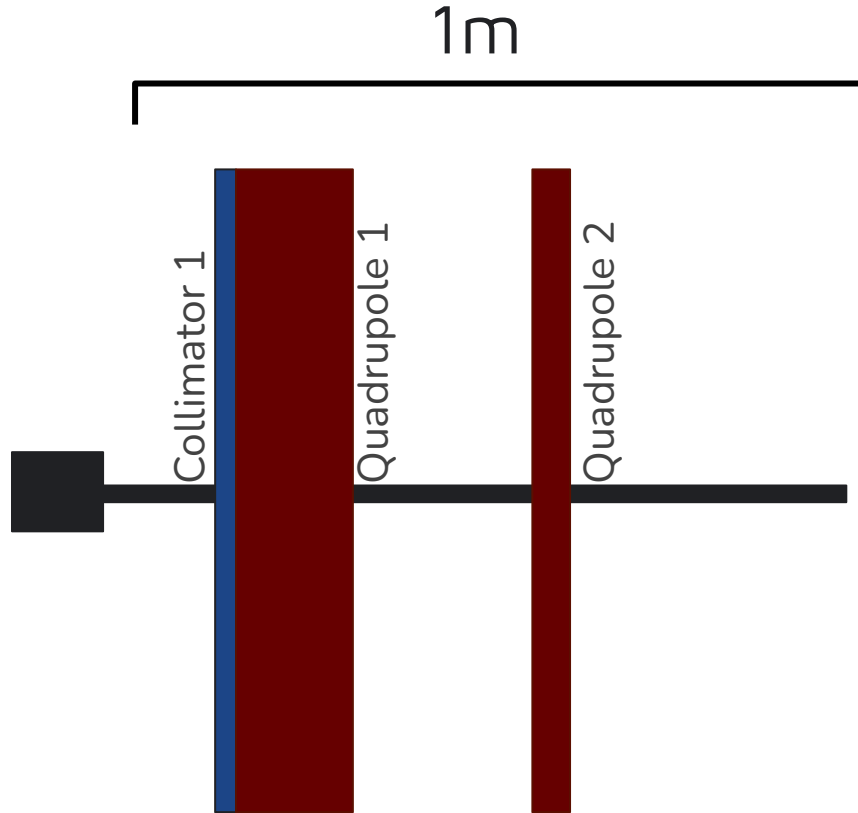
Why 4 quad set up:

Could use stronger quads (LION strength potential) and focus to a larger spot size with a higher transmission.

New PoPLaR Set-Up



Optimisation- Part 1

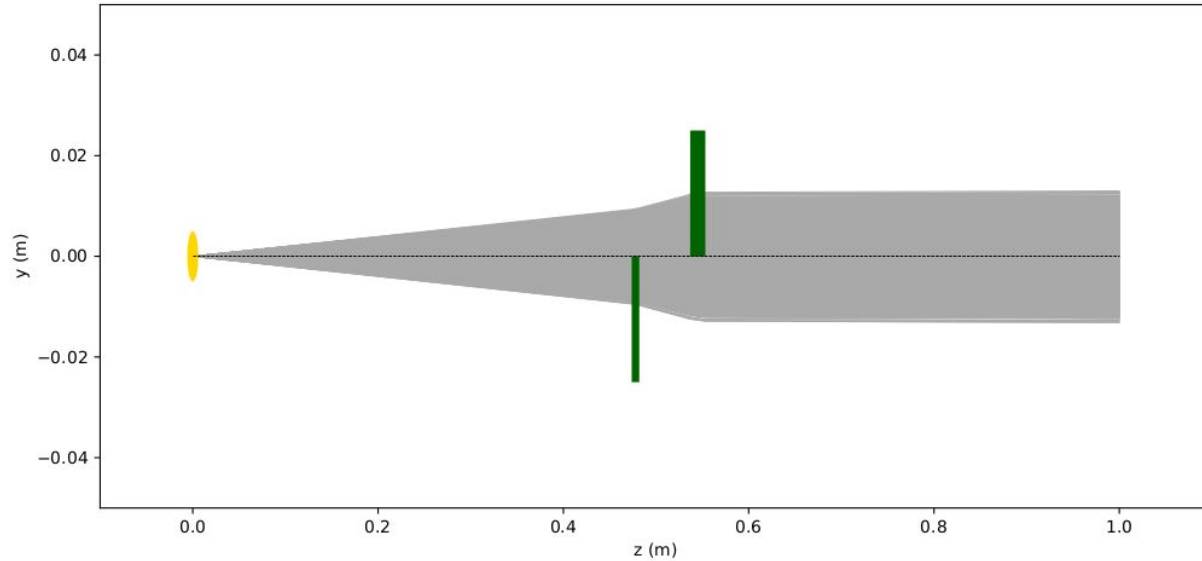
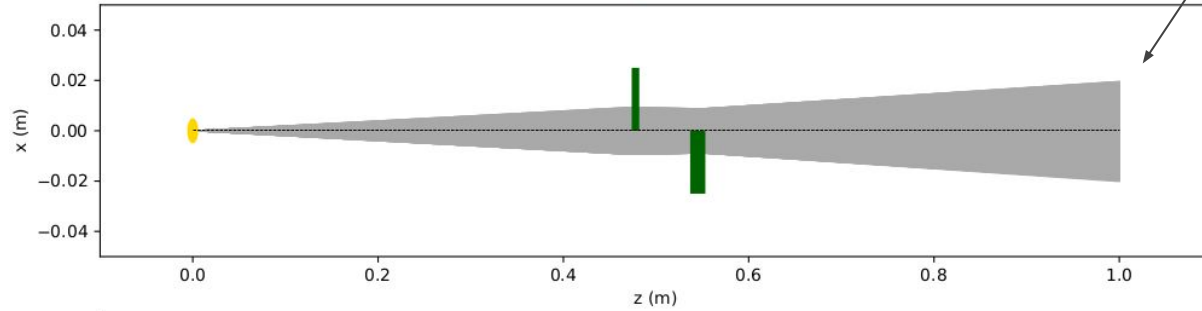


- Finding the optimal position of the first quad pair to find the smallest spot size through at 1m

Optimisation- Part 1

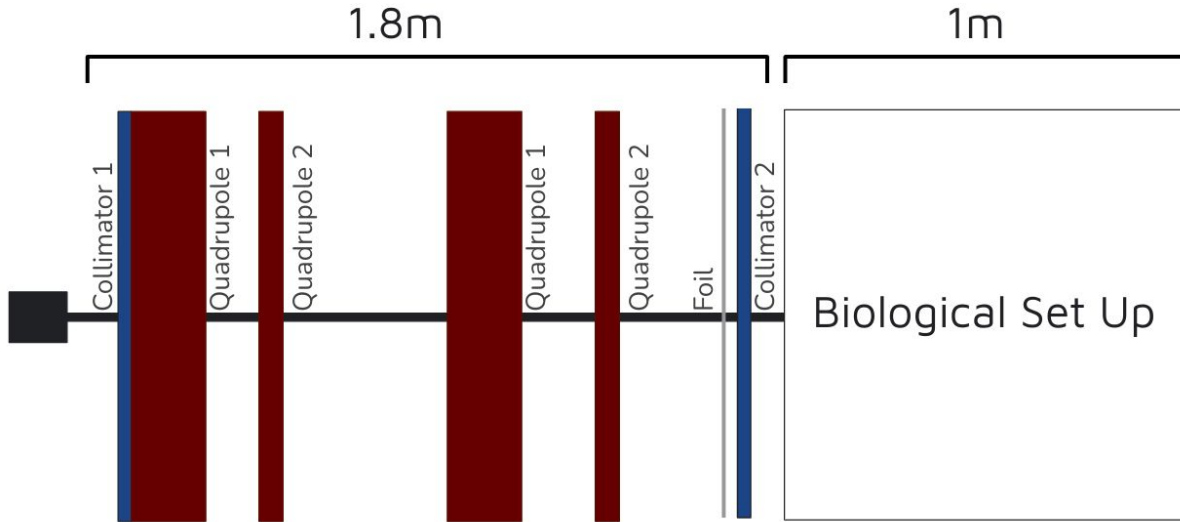
'Collimator'

Test lab coordinate system visualise



- Bayesian Optimisation:
- Scikit-optimize
 - Gaussian Processing

Next Step



Part 2 of optimising:

Add next 2 quads and find the optimal distance for max transmission with a 1cm spot size at the end