

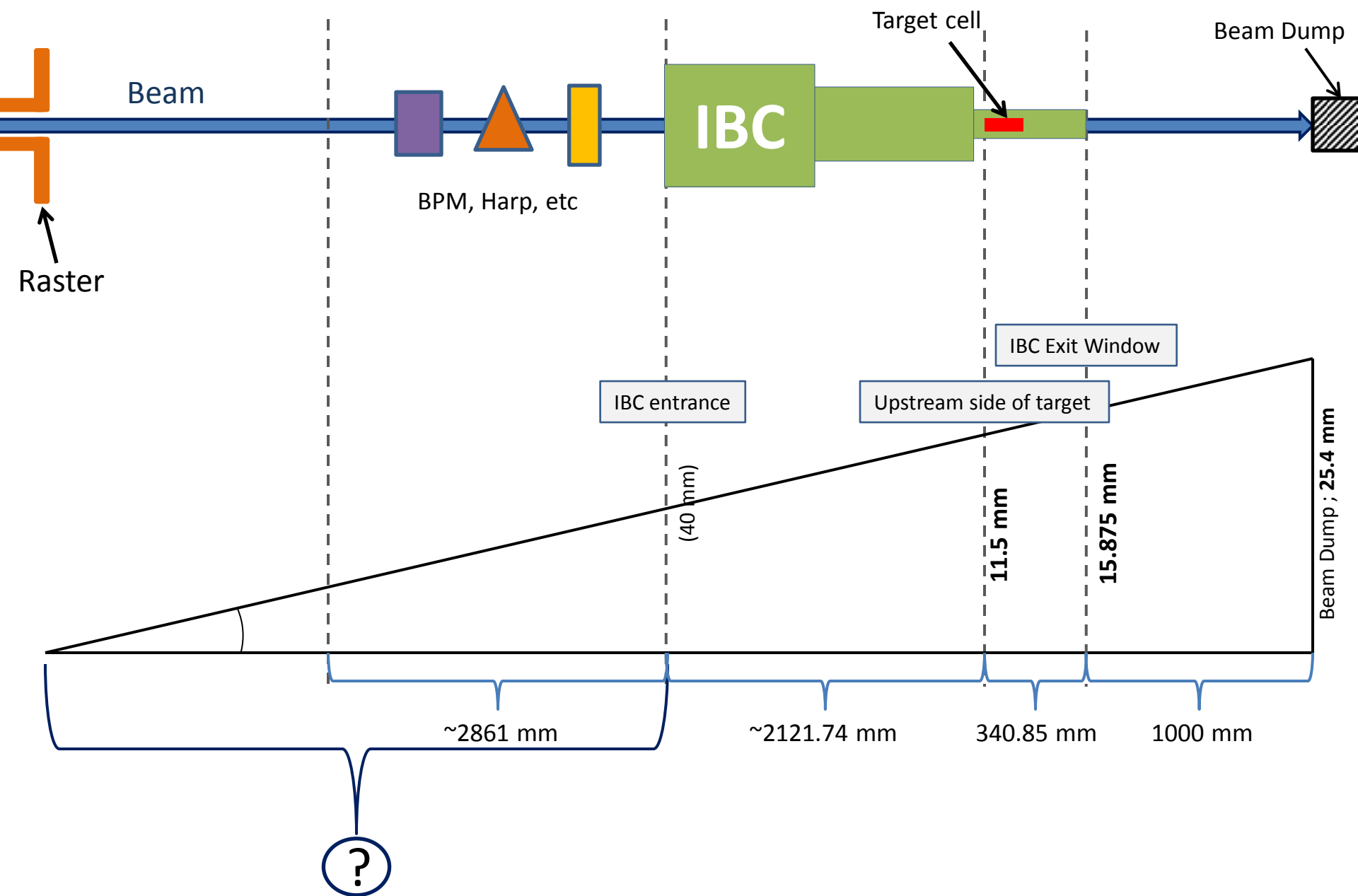
# Raster Position Calculation for HDice in UITF

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# Restrictions/Requirements:

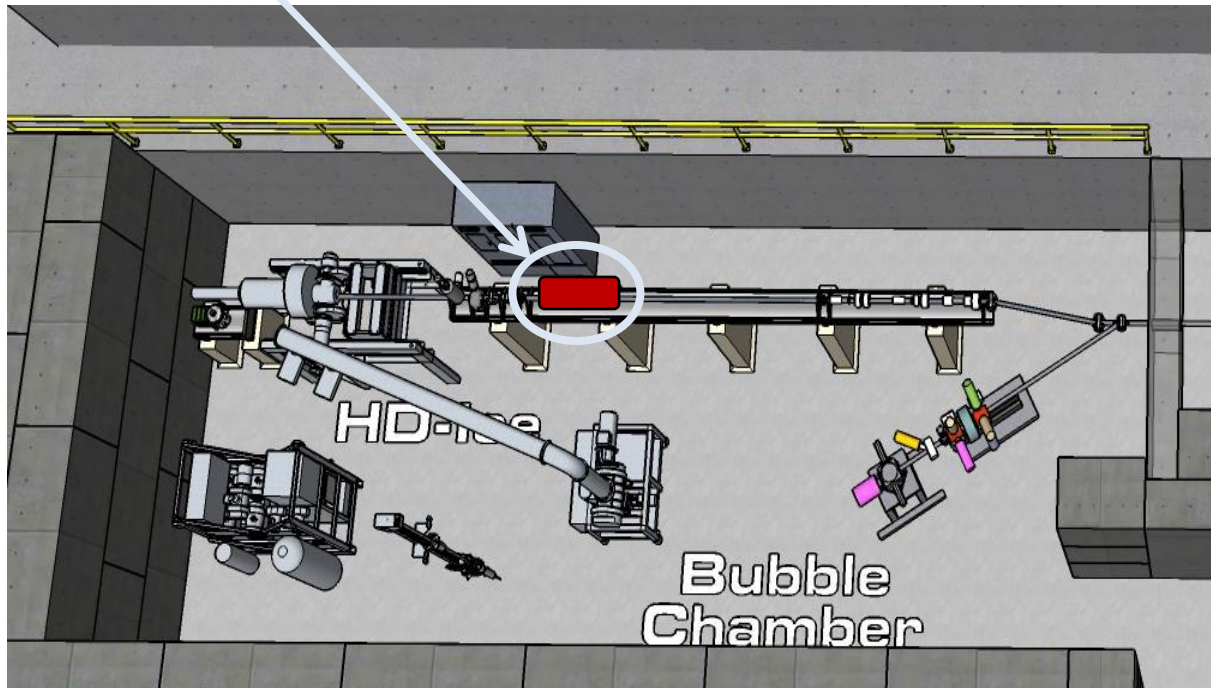
- Beam spot on upstream side of target cell should be 23 mm (in diameter).
- Pass through 31.75 mm (in diameter) IBC Exit Window which is 340.85 mm downstream of entrance of target cell.
- Enter 50.8 mm (in diameter) Beam Dump which is 1000 mm downstream of IBC Exit Window.

(not to scale)



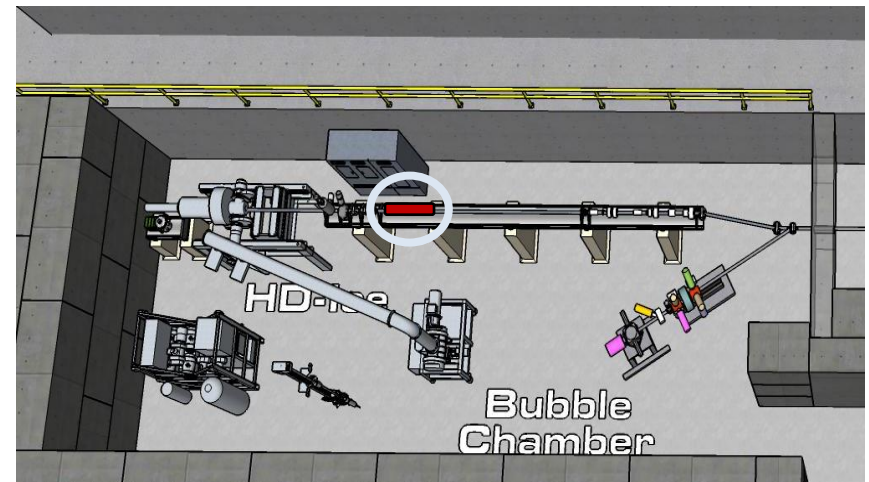
# Where?: Position #1

- Assumed Raster is the 6 GeV Fast Raster using the driver for the 11 GeV Fast Raster (described in HDice Technical Note 28).
- Closest position (due to beamline components) is  $\sim 5\text{m}$  from IBC entrance.



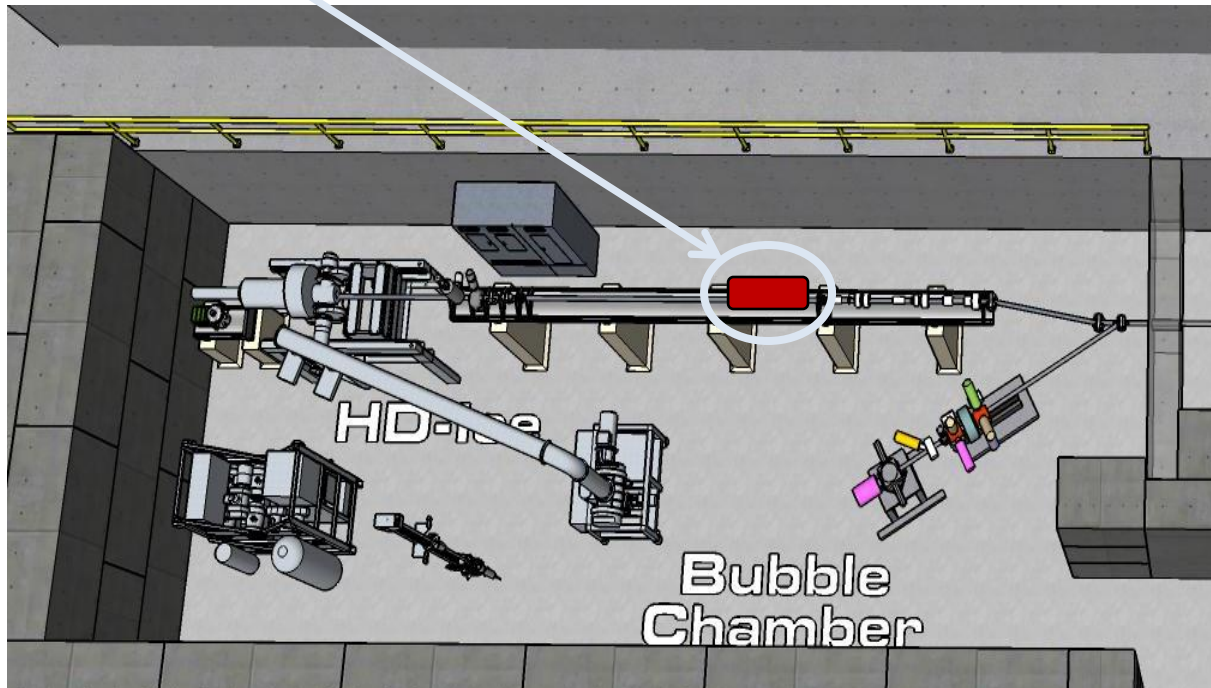
# Where?: Position #1

- Assumed Raster is the 6 GeV Fast Raster using the driver for the 11 GeV Fast Raster (described in HDice Technical Note 28).
- Closest position (due to beamline components) is ~5m from IBC entrance.
- Beam radii:
  - 11.5 mm at upstream side of target
  - 12.285 mm at IBC exit
  - 14.593 mm at Beam Dump
  - 6.5% of full power



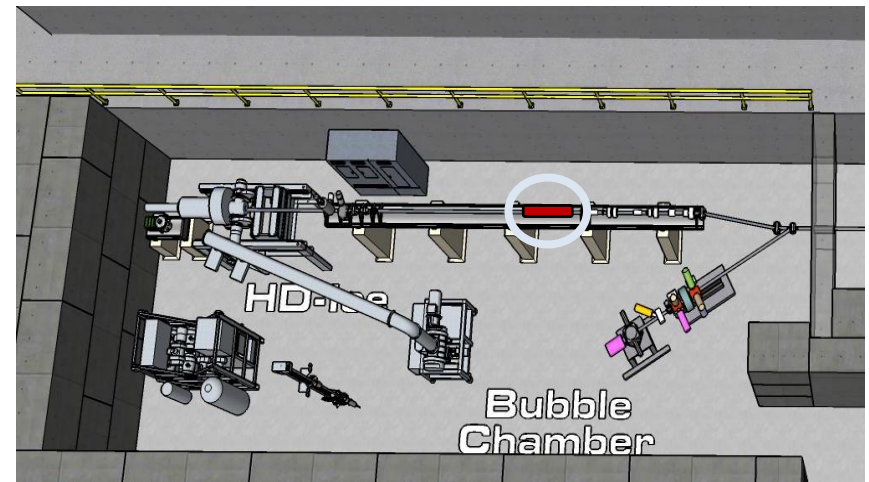
# Where?: Position #2

- Assumed Raster is the 6 GeV Fast Raster using the driver for the 11 GeV Fast Raster (described in HDice Technical Note 28).
- Farthest position (due to last bending magnet) is  $\sim 8.6\text{m}$  from IBC entrance.



# Where?: Position #2

- Assumed Raster is the 6 GeV Fast Raster using the driver for the 11 GeV Fast Raster (described in HDice Technical Note 28).
- Farthest position (due to last bending magnet) is  $\sim 8.6\text{m}$  from IBC entrance.
- Beam radii:
  - 11.5 mm at upstream side of target
  - 11.955 mm at IBC exit
  - 13.288 mm at Beam Dump
  - 3.8% of full power



# Conclusion:

- The Raster can go anywhere in the available space of the UITF beamline.

# To Do:

- Obtain exact dimensions of proposed beamline and its components.
- Determine how low we can go in Raster power while maintaining control.