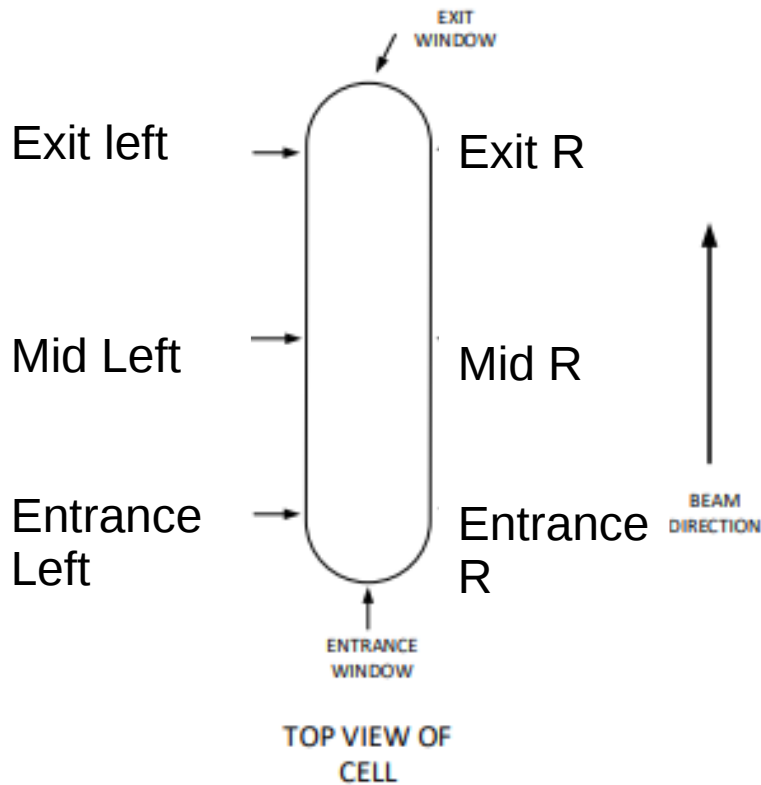


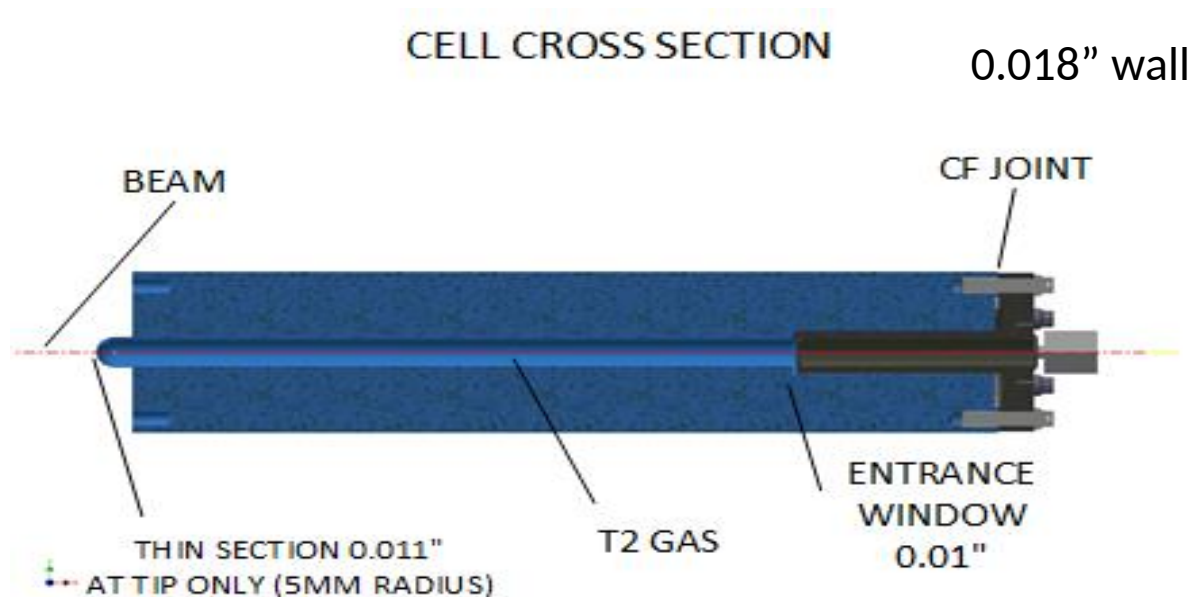
# Top Drawing of target cell and measurements of the cell wall in mm



Position on Cell	Empty Cell	T2 Cell	H2 Cell	D2 Cell	He-3 Cell
Entrance	0.254 ± 0.0051	0.253 ± 0.004	0.311 ± 0.001	0.215 ± 0.004	0.203 ± 0.007
Exit	0.279 ± 0.0051	0.343 ± 0.047	0.330 ± 0.063	0.294 ± 0.056	0.328 ± 0.041
Exit left	0.4064 ± 0.0051	0.379 ± 0.007	0.240 ± 0.019	0.422 ± 0.003	0.438 ± 0.010
Exit right	0.4216 ± 0.0051	0.406 ± 0.004	0.519 ± 0.009	0.361 ± 0.013	0.385 ± 0.016
Mid left	0.457 ± 0.0051	0.435 ± 0.001	0.374 ± 0.004	0.447 ± 0.009	0.487 ± 0.060
Mid right	0.432 ± 0.0051	0.447 ± 0.004	0.503 ± 0.005	0.371 ± 0.012	0.478 ± 0.007
Entrance left	0.508 ± 0.0051	0.473 ± 0.003	0.456 ± 0.010	0.442 ± 0.005	0.504 ± 0.003
Entrance right	0.424 ± 0.0051	0.425 ± 0.003	0.457 ± 0.006	0.332 ± 0.011	0.477 ± 0.011

# Tritium target info

- cell length is 25 cm +/- 0.5 mm
- Radius of exit window ~6.5 mm
- ID of 12.7 mm
- Entrance window Al 0.254 mm
- Al side wall 0.457mm



# Target Thickness

- D2 0.1422 g/cm<sup>2</sup>
- H 0.0708 g/cm<sup>2</sup>
- He<sup>3</sup> 0.0534 g/cm<sup>2</sup>
- H<sup>3</sup> 0.077 g/cm<sup>2</sup>

# Before and after the target!

## **Upstream**

- Be 0.2003 mm Window

## **Downstream**

- From center of pivot to scattering chamber window: 57.15 cm (under vacuum)
- Scattering Chamber window: Al 0.03556 cm
- From Chamber to Q1 entrance 81.5974 cm (open air)
- Entrance window of spectrometer: Kapton 0.01778 cm
- Vacuum through magnets
- Exit of Q3 Ti 0.01016 cm

# Maybe helpful:

- Radiation length from PDG:
  - <http://pdg.lbl.gov/2017/AtomicNuclearProperties/index.html>
  - Ti 16.16 g/cm<sup>2</sup> - 3.560 cm
  - Al 24.01 g/cm<sup>2</sup> - 8.897 cm
  - Be 65.19 g/cm<sup>2</sup> – 35.28 cm
- <http://pdg.lbl.gov/2007/reviews/atomicrpp.pdf>
  - Polyimide film (Kapton) 40.58 g/cm<sup>2</sup> - ~ 28.5775 cm

# Sources

- [https://wiki.jlab.org/jlab\\_tritium\\_target\\_wiki/images/e/e4/A\\_Tritium\\_Target\\_Design\\_Report\\_April\\_8\\_2014.pdf](https://wiki.jlab.org/jlab_tritium_target_wiki/images/e/e4/A_Tritium_Target_Design_Report_April_8_2014.pdf)
- <https://logbooks.jlab.org/files/2018/01/3508717/TGT-RPT-17-007.pdf>
- <https://logbooks.jlab.org/files/2017/12/3501699/TGT-CALC-17-020.pdf>
- Jessie Butler – For length between spectrometer vacuum window and scattering chamber, and kapton/Ti window thickness