

# MDI Challenges: IR Beam Pipe Cartoon

Last revision: October 20, 2017

## Rear Side

Circulating beam electrons, scattered electrons (tagger) and synrad exit here. 130 mm horizontal x 30 mm vertical rectangular aperture (flange?)

Protons enter here  
20 mm diameter  
circular flange

With the 22 mrad crossing angle, the distance between the beams increases by 2.2 cm for each m away from the center.

Beam pipe in the detector region should be as thin (radiation lengths) as possible (Be with thin Au coating?). Region bracketed here has a length of 9 m, centered in the detector(?).

Intermediate angle forward particles exit here through a thin window to be analyzed in B0 spectrometer. Horizontal distance between incoming and outgoing undeflected beams is  $\sim 10$  cm at this point.

Circulating hadron beam, small angle forward charged particles and neutrons exit here. 20 mm diameter circular flange.

Electrons enter here. 11 mm horizontal x 10 mm vertical radii.

## Forward Side

**Wake fields and trapped HOM heating?**  
**Vacuum pumps, bellows, BPS etc.?**

