

# **Summary of the beam position measurement**

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2018/Jan/15

## ***Conclusions***

For the horizontal beam positions, the discrepancies between the measured and expected values are no larger than 1 cm.

If we shifted the input beam by 7.8 mm towards the negative Y direction, the discrepancies would be no larger than 2 mm at both IXC and IYC.

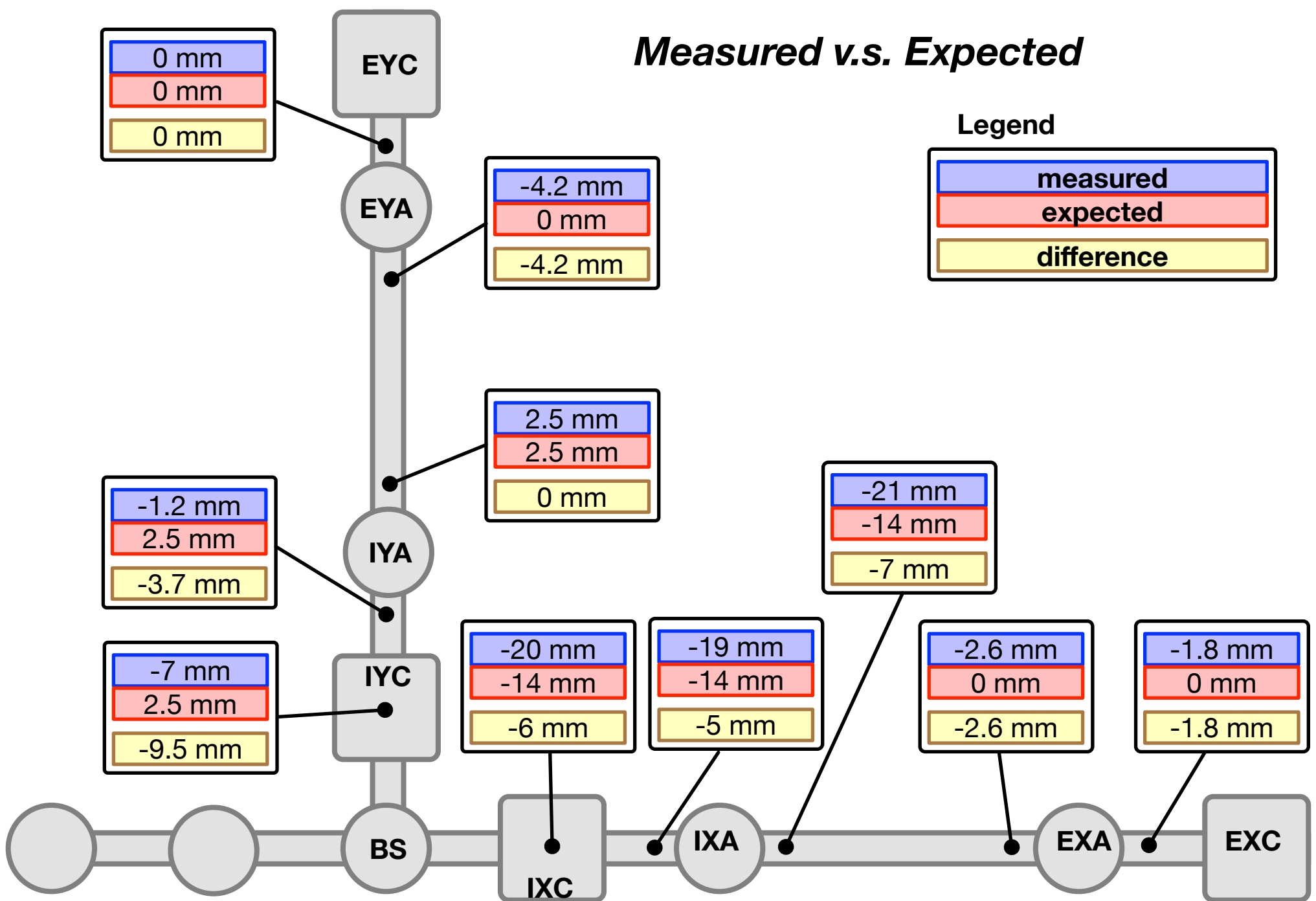
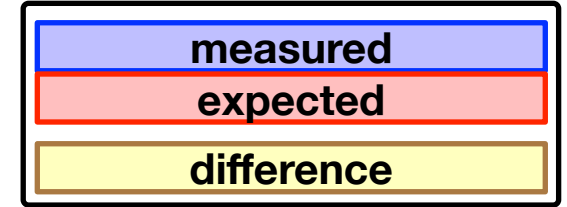
Since the beam size is on the order of 30 mm, the 2 mm discrepancies on the ITM locations are tolerable.

## ***Recommendations***

We don't immediately need to change the chamber locations or the optic locations. A precision measurement should be performed in the future once the full interferometer is locked.

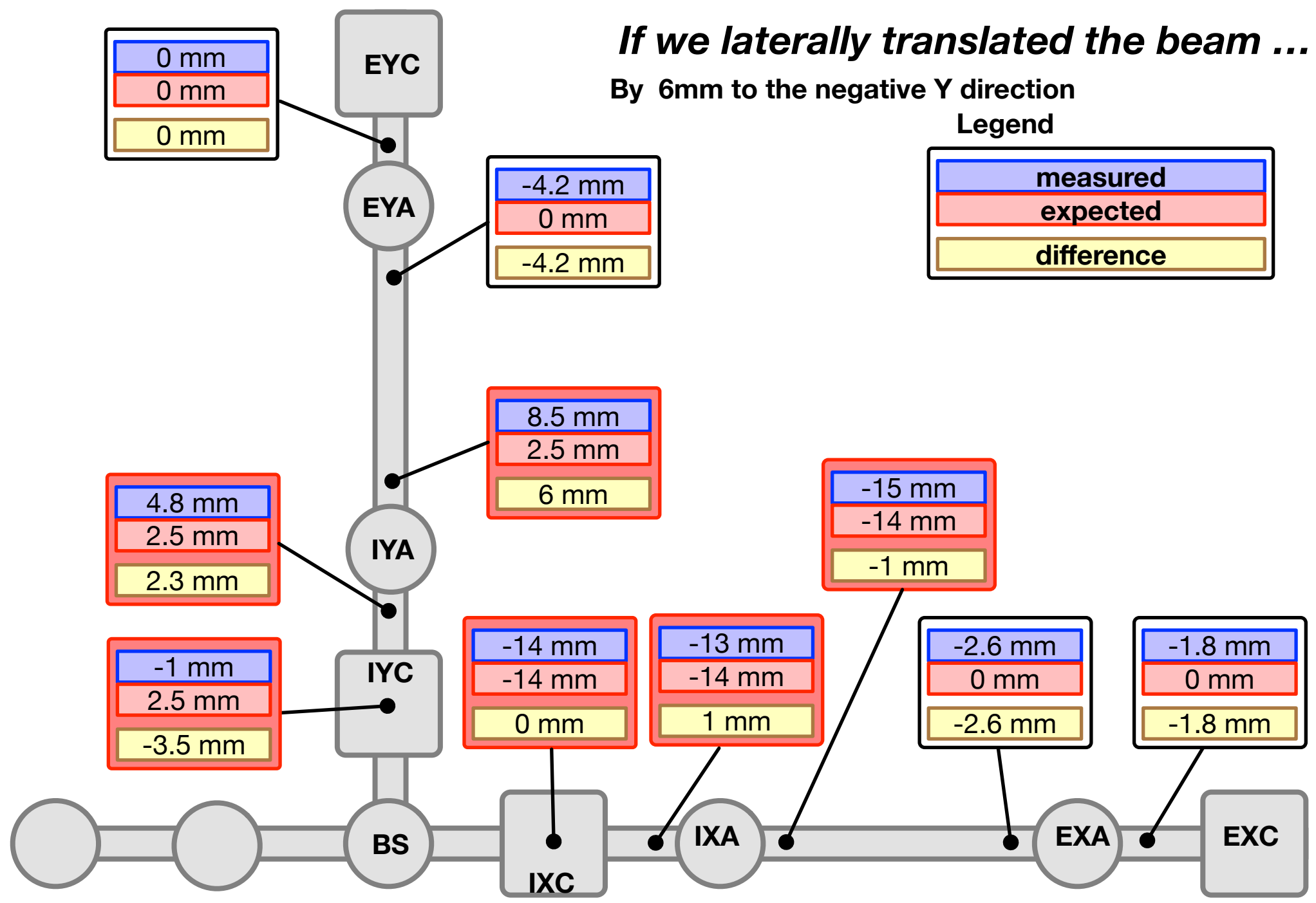
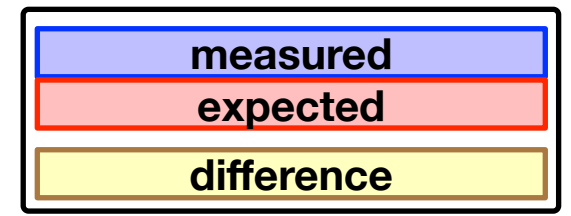
# Measured v.s. Expected

## Legend



***If we laterally translated the beam ...***  
**By 6mm to the negative Y direction**

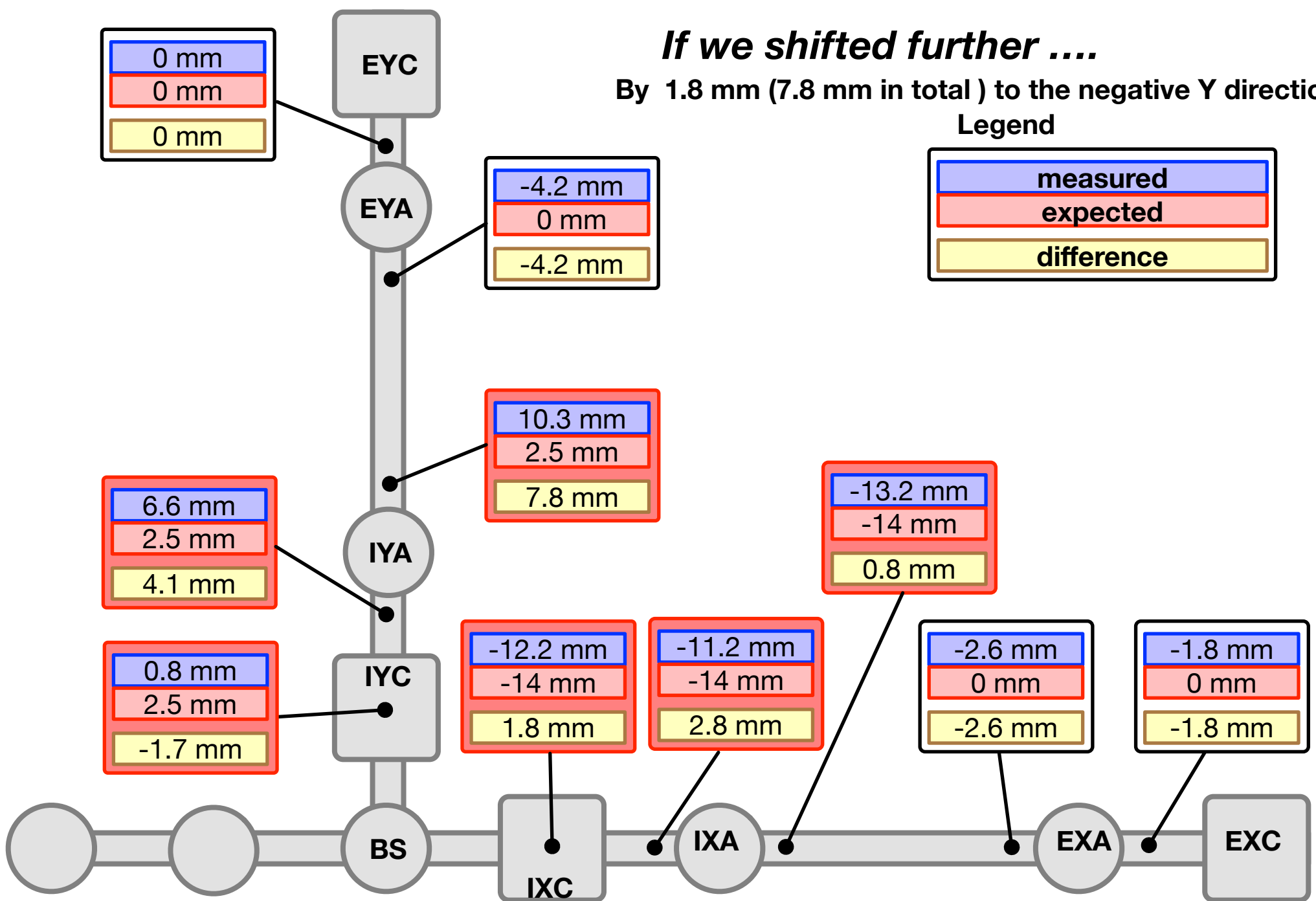
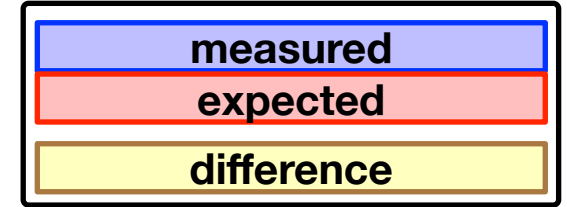
**Legend**



# *If we shifted further ....*

By 1.8 mm (7.8 mm in total ) to the negative Y direction

Legend



## ***References***

- [1] 'Beam Position Measurements', G1707418-v1
- [2] 'Notes on the beam layout without ITMs', T1807652-v1