

FP20 Optics - MHWS/Patrol Camera Optical Interface

Interface Document: LN-INAF-A-FDR-INT-053		Issue: 1.2
Relevant Documents: LN-MPIA-FDR-OPT-001, LN-INAFR-FDR-AO-001		
Brief Description: This document describes the optical interface between the FP20 optics and the MHWS/patrol camera group.		
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Interface Description

The optical beam coming from the FP20 optics is folded towards the MHWS using either a beam-splitter or a flat mirror. The beam-splitter is used during the acquisition phase of the suitable reference stars for the MHWS because part of the light has to be collected by the patrol camera. The solid mirror is used during normal scientific operation.

The optical interface is the F/20 focal plane (FP20 in the following) created by the warm optics.

Interface Specification

In Figure 1 the reference frame is defined. The (X, Y) position of the origin coincides with the center of the cryostat hole; the Z position of the origin is the height on the bench of the optical axis of the beams coming from M3.

With respect to this origin, the center of the FP20 is:

$$X = \pm 442.315 \text{ mm}$$

$$Y = -2386.280 \text{ mm}$$

$$Z = 31.917 \text{ mm}$$

where the \pm sign refers to the FP20 focal plane of the two LBT arms.

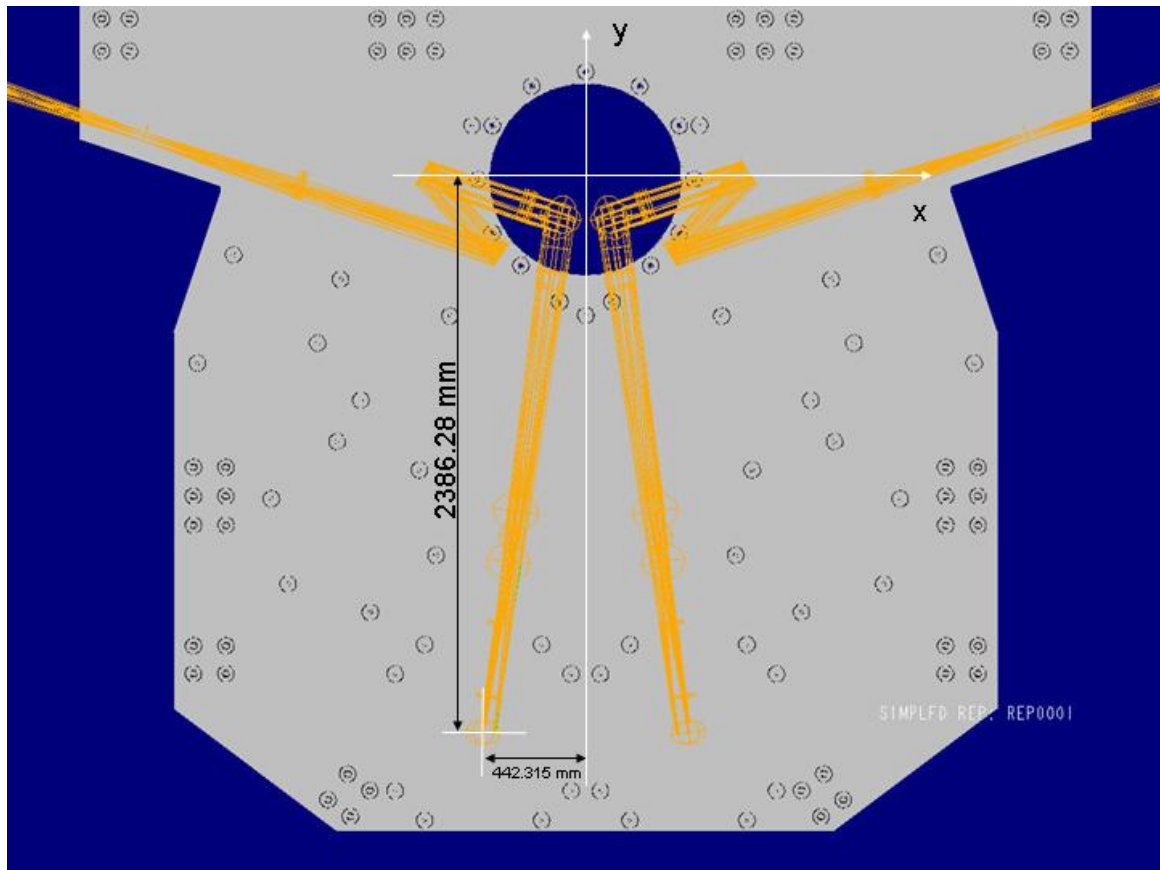


Figure 1. Definition of XY coordinate system on the LN bench. The Z axis is orthogonal to the XY plane, with the positive direction coming out from the drawing. The origin of the Z axis is defined by the height of the optical beam coming from the telescope, and it should be 268 mm above the top surface of the optical bench.

Special remarks

- The last lens of the FP20 optics will be used to compensate for the displacement of the FP20 focal plane due to thermal effects.
- The mounts of the beam-splitter/folding mirror will allow small adjustments along the direction of the optical axis, in order to compensate errors in the positioning of the FP20 focal plane at the entrance of the MHWS. Of course, this will cause a lateral shift of the FP20 at the entrance of the MHWS, that will be compensated either by a lateral shift of the whole MHWS or by re-positioning the star enlargers (required sensitivity 0.01 mm).
- The mounts of the beam-splitter/folding mirror will allow small adjustments of the tip-tilt, in order to align the direction of the incoming beam with the MHWS optical axis (required sensitivity 10").