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Laser Interferometer Gravitational Wave Observatory (LIGO) Project

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# NEW ISCT4 LAYOUT AND AS SIGNAL PATH

**Summary:**

To accommodate a total of four photodetectors at the anti-symmetric port for detection we propose a new layout of ISCT4. To minimize the coupling from dust particles falling through the beam we avoid an intermediate focus.

## Current State:

Figure 1 presents the current layout of ISCT4. It doesn't include the OMC which uses the AS PD2 path.

## New Layout:

Figure 2 presents the new layout of ISCT4. The main features are:

- The focusing lens has been moved after the WFS split. The WFS path implements a new 600 mm lens whereas the LSC path keeps the 1000 mm lens. There is no intermediate focus anymore in the LSC path.
- The locking PD moves to the old WFS5 path and is now called AS PD5. The trigger PD is moved to the WFS path as well.
- New photodetectors for detection are installed in the LSC path: AS PD 1 and AS PD 4.
- The diverging lens in front of WFS1 is moved back to account for the translation and change of focal length of the upstream lens.
- The OMC work can be continued at the AS PD2 path if necessary.

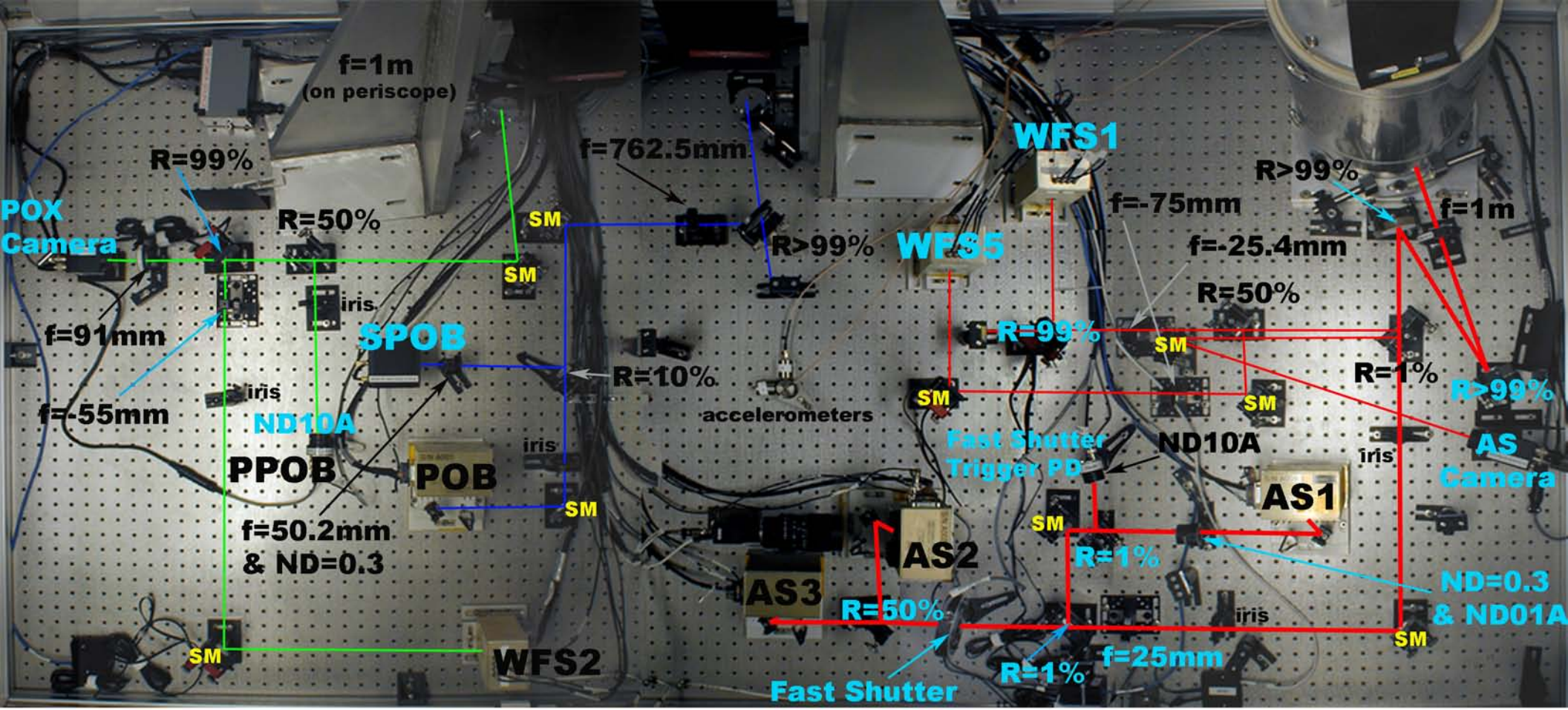


**Figure 1: Schematic view of current H1 ISCT4 layout.**

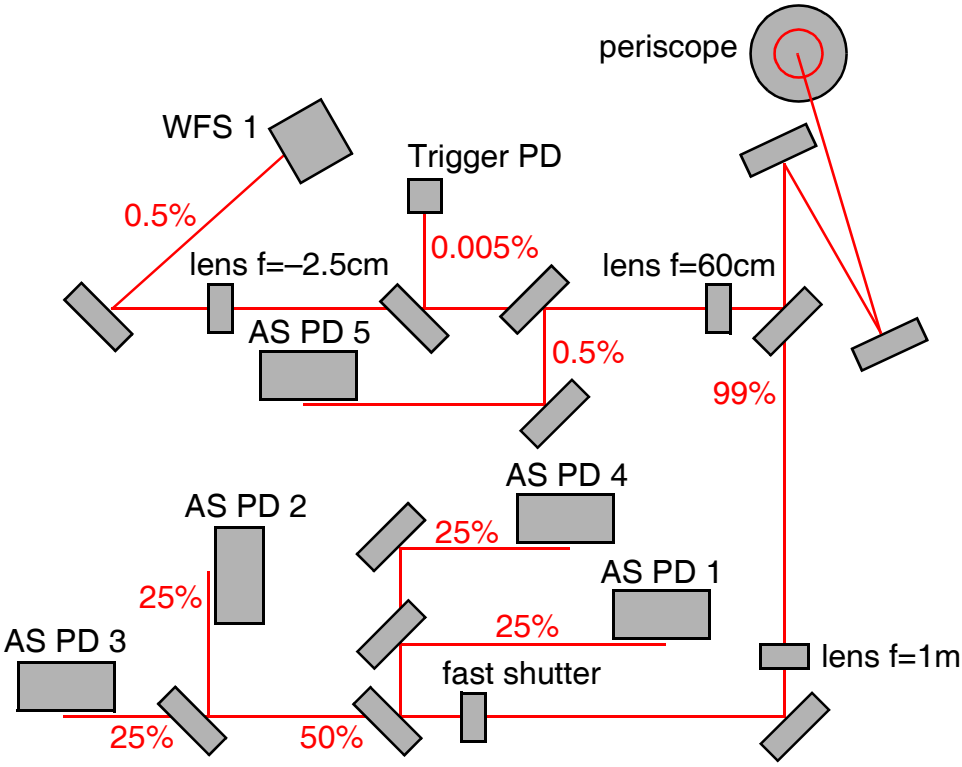


**Figure 2: Schematic view of proposed H1 ISCT1 layout (AS path only).**