

Task sheet – Replacement of B1_PD2 photodiode

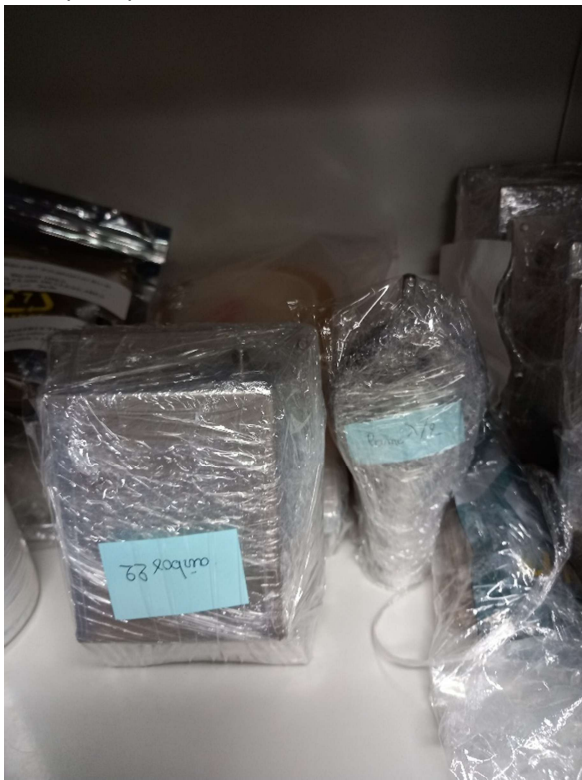
Team on site: P. Spinicelli, M. Gosselin

Remote team: R. Gouaty, M. Was, A. Masserot

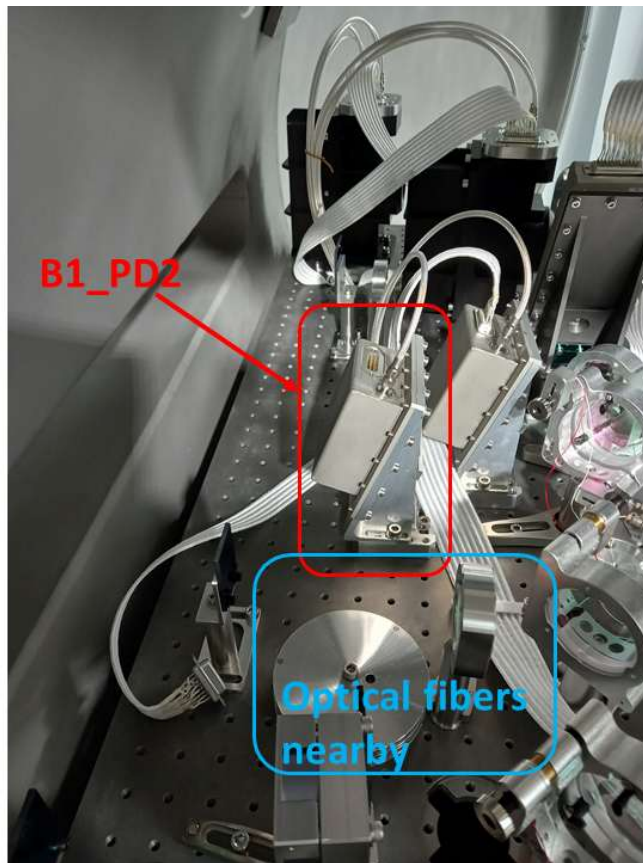
Goal: Replace the B1_PD2 photodiode that currently show some excess noise

Procedure/Plan:

- The spare photodiode **airbox 22** can be found at the second floor of the LAPP storage room.



- Close OMC shutter. Put DET_MAIN in PAUSE.
- Open SDB2_LC and SDB2_SBE loops. Venting of SDB2 minitower (VAC team), open the doors.
- Block SDB2 bench.
- Switch off SDB2_DBOX_LeftDown.
- Carefully check the position of the optical fibers on the bench to make sure to not break them during the works.
- Unplug the B1_PD2 photodiode (this should be the **airbox 23**, **placed in reflection** of the beam splitter that splits the beam between B1_PD1 and B1_PD2). This means disconnecting the Sub-D15 cable and the RF SMA cable.



- Take note of the position of the airbox 23 on its basis. Then unscrew the 2 M6 screws that hold the air box in its basis.
- Remove airbox 23, weight it.
- Disassemble the beam dumps from airbox 23.
- Assemble the same beam dumps on airbox 22.
- Weight airbox 22. Carefully clean the viewport with a duster.
- Install the airbox 22 on the SDB2 bench. Try to position it at the same position as the previous airbox. Tighten the screws. Recable it.
- Switch back on the DAQ box SDB2_DBOX_LeftDown. Reconfigure all the DAQ box.
- Test Vbias and shutter activation. Close shutter and measure dark noise of the photodiode. Then disactivate Vbias.
- Adjust bench weight only if necessary.
- Release the bench, rebalance the bench, adjust height with temporary weights to put the bench close to its nominal height ($Y = 500$), close local controls (at least LC angular control loops, while SBE position loops are not really needed for the coarse alignment). Check that the bench is not too far from 0 in X (but 0.5 mm off is still OK for the coarse alignment).
- Reactivate DET_MAIN. Put the ITF in NI single bounce. Engage SDB1 B5 beam drift control. Open OMC slow shutter. Scan the OMC in temperature and stabilize it or lock it on the 56 MHz TEM00 mode. Then activate the B1_PD1 and B1_PD2 Vbias and open shutters. Check that there is light reaching the photodiodes and compare the two powers. If they are close to be equal this means that the coarse alignment is done.
- Close shutters of B1_PD1/2, disactivate B1_PD1/2 Vbias.
- Close the OMC slow shutter. Put DET_MAIN in PAUSE. Open SDB2 LC. Open SDB1 B5 beam drift control.
- Remove temporary weights from SDB2. Close SDB2 minitower. Start pumping.

Recovering after SDB2 is back in vacuum:

- Stop pumping.
- Recover SDB2 timing by reconfiguring the DAQ boxes.
- Adjust suspension control (**SBE expert needed**) and close the SDB2 local controls.
- Reactivate DET_MAIN. Set NI single bounce. Close SDB1 B5 drift control. Open OMC shutter.
- Lock the OMC on the 56 MHz TEM00 mode. Check the fine alignment of B1_PD2.
- Update blending filters of B1_PD2 in SDB2_Photodiodes after collecting some data in single bounce.