

Using heat-shrink tube on extension fibers

28 December 2020

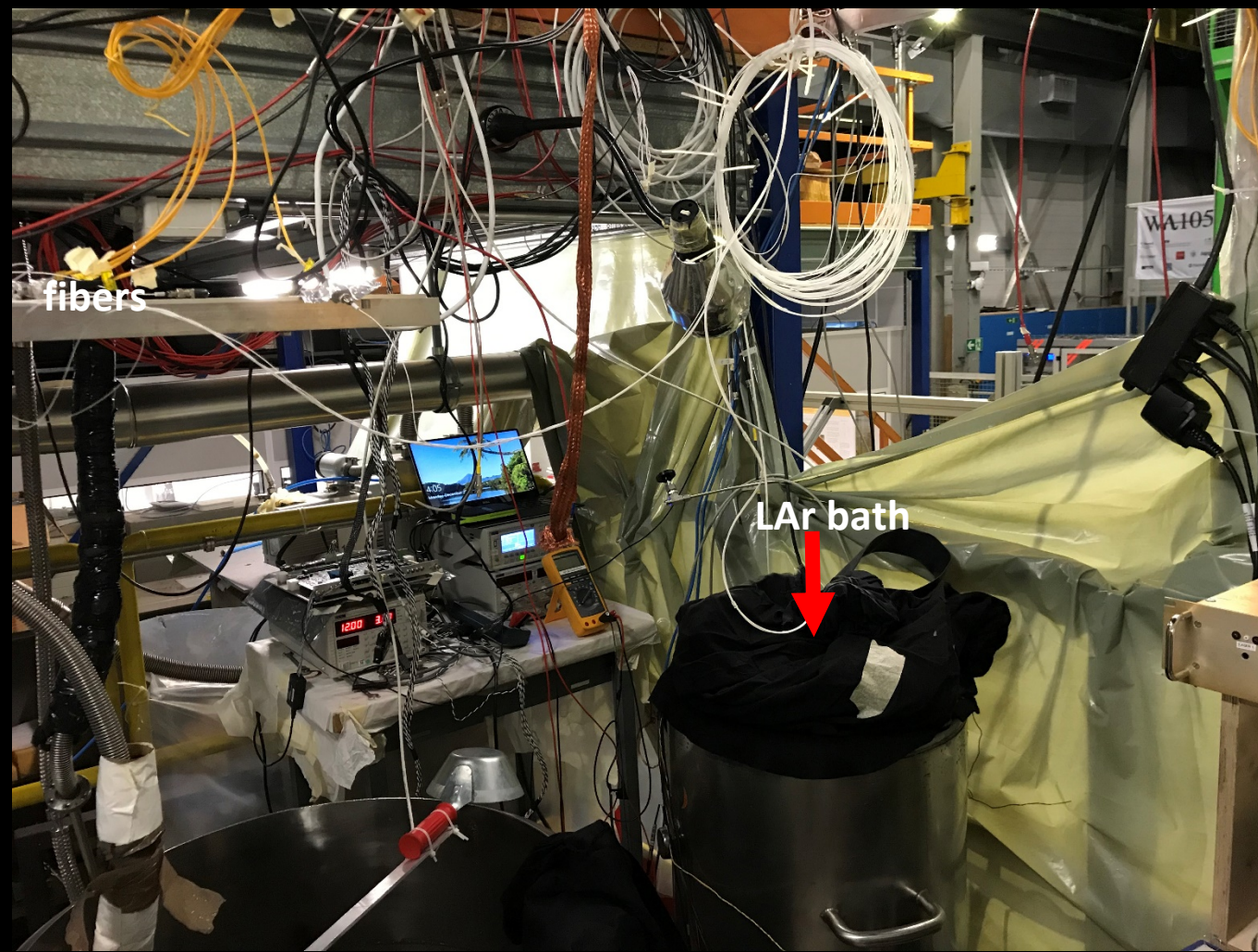
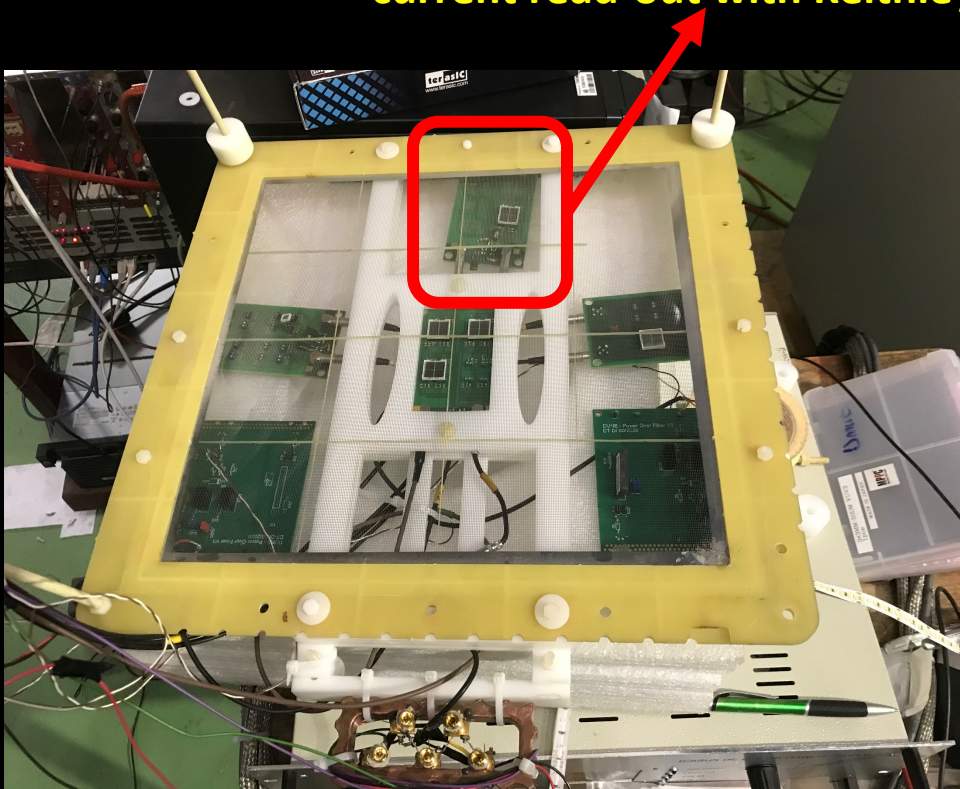
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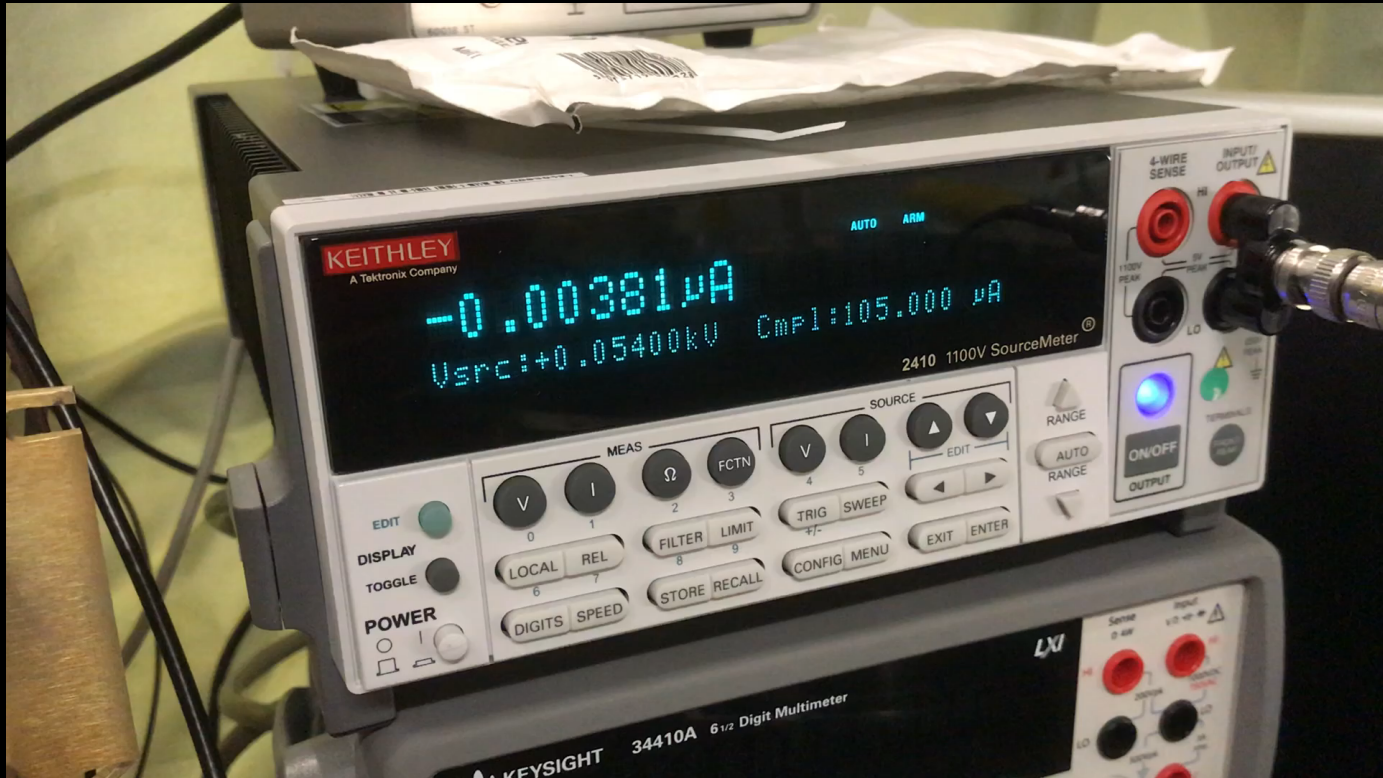
We have used shrink tube to cover the extension fibers



15 cm long black heat-shrink tubes used at fibers end points

Reference SiPM board powered and current read-out with Keithley 2400



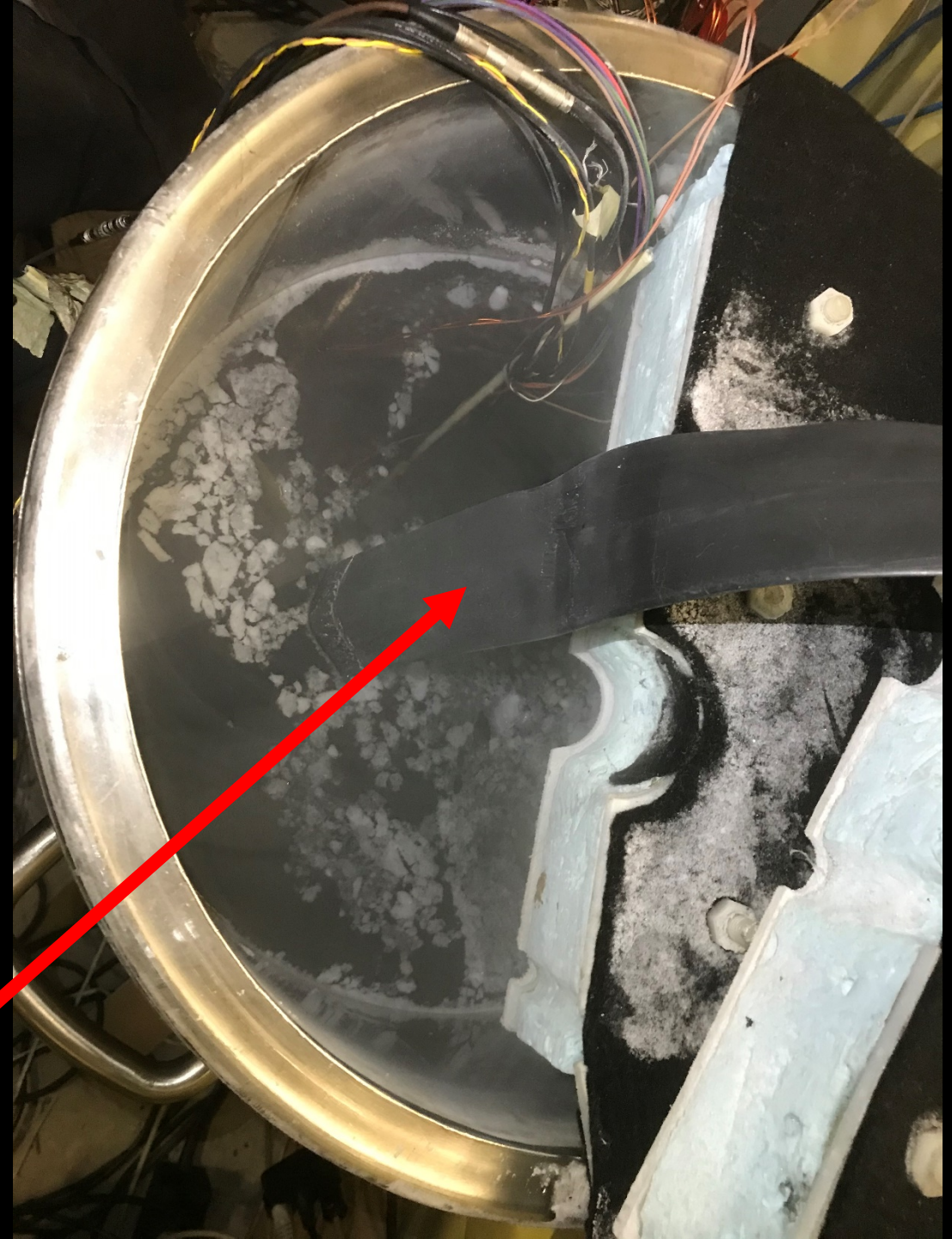
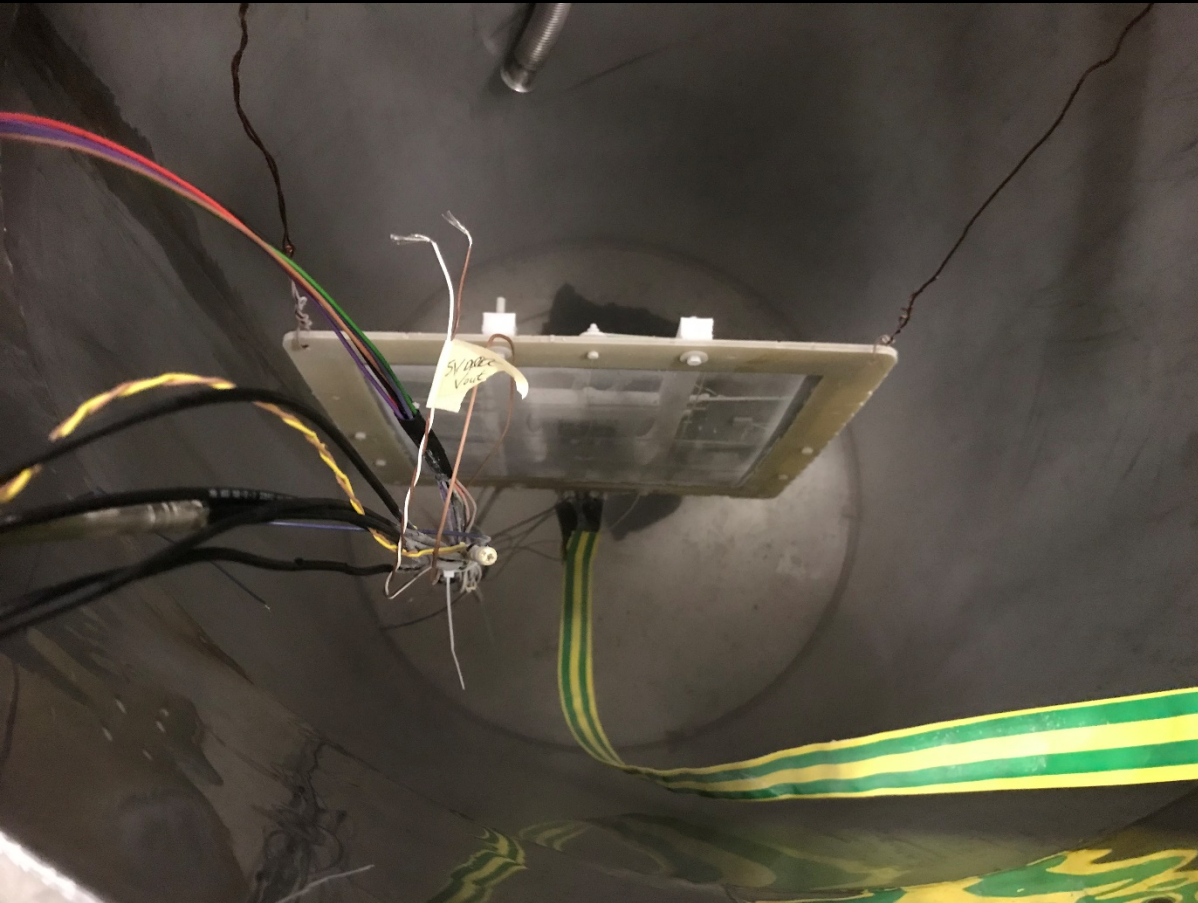


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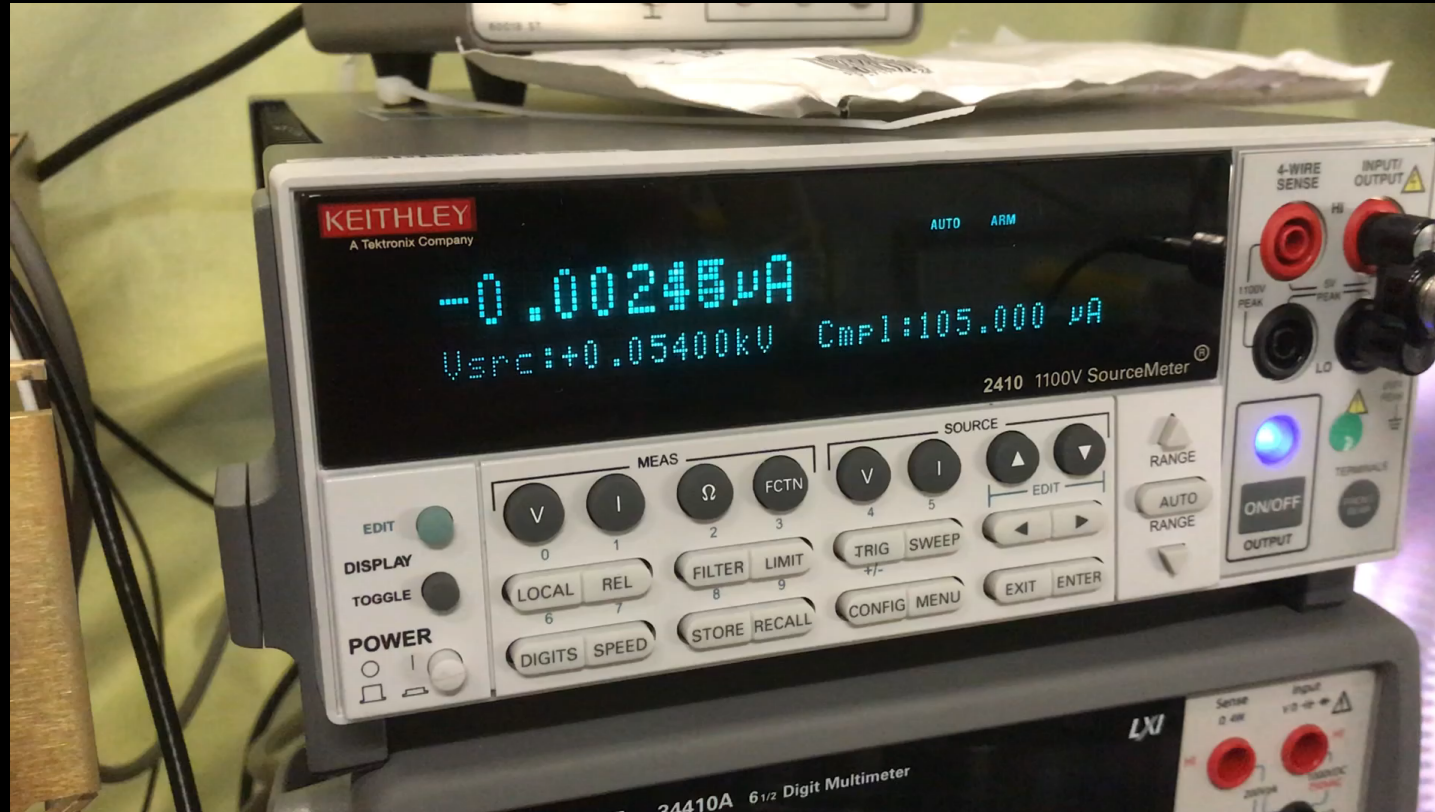
Yellow-green heat-shrink tubes was not good choice!

Light diffused also from the heat-shrink (seen clearly w/ infrared cameras)!

- We have used reference SiPM board powered and current readout w/ Keithley.
- PoF unit OFF, current on Ref_SiPM < 0.01uA
- PoF unit ON, current on Ref_SiPM ~45 uA



We have inserted yellow-green shrink tube into wider black heat-shrink tubes



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- Using black heat-shrink tube on the top of previous tubes improve the situation. Still we have some light diffused into the dewar!
- We could not see the diffused light w/ infrared camera while the impact could be seen on the reference SiPM board.
- Most probably the light is diffused around the PPC connectors.
- PoF unit OFF, current on Ref_SiPM < 0.01uA
- PoF unit ON, current on Ref_SiPM ~0.1 uA
- Cosmic muons seen on SiPM board powered with PoF units (4-PPC in series)

Summary:

- We use heat-shrink tubes on fibers to isolate diffused light into LAr. With current solutions, we could improve the system a lot and see cosmic muon signal on SiPM board powered with PoF units (4-PPC in series; 48Volts).
- We also test 12V-DC-DC converter units using 1-PPC from Fermilab PoF units. We still could not get the right voltage output from DC-DC circuit since we could not get the right voltage/current from PPC unit. That could be due to power loss along the fiber. We are going to test the circuit by pass white fibers and use directly yellow fibers connected to the laser module.
- 5V-DC-DC circuit together with 5W laser diode is not checked. To be done on 29 December 2020.
- As a results of today's test, we have to find a proper fibers to be used in LAr.
- It would be nice to use more sophisticated fiber feedthrough (w/ FC-FC connectors). Need to be very careful on handling, moving around w/ the current fiber feedthrough.