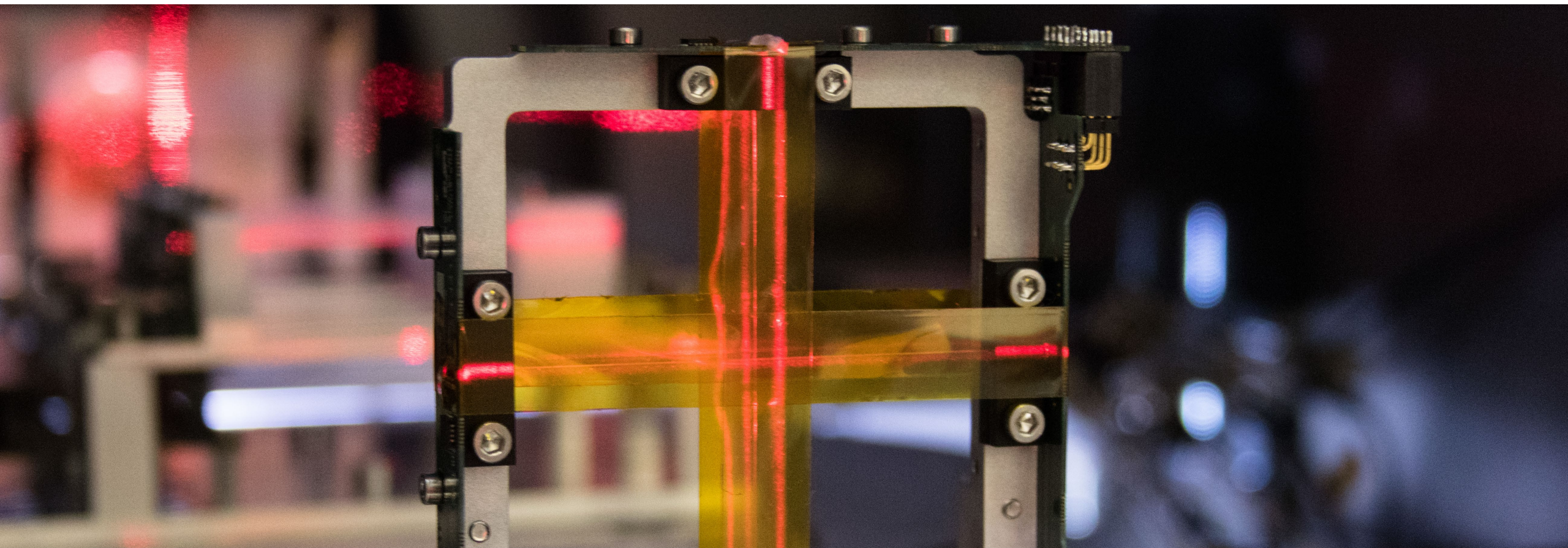


Quick Update on SFHs / UTS for PRM

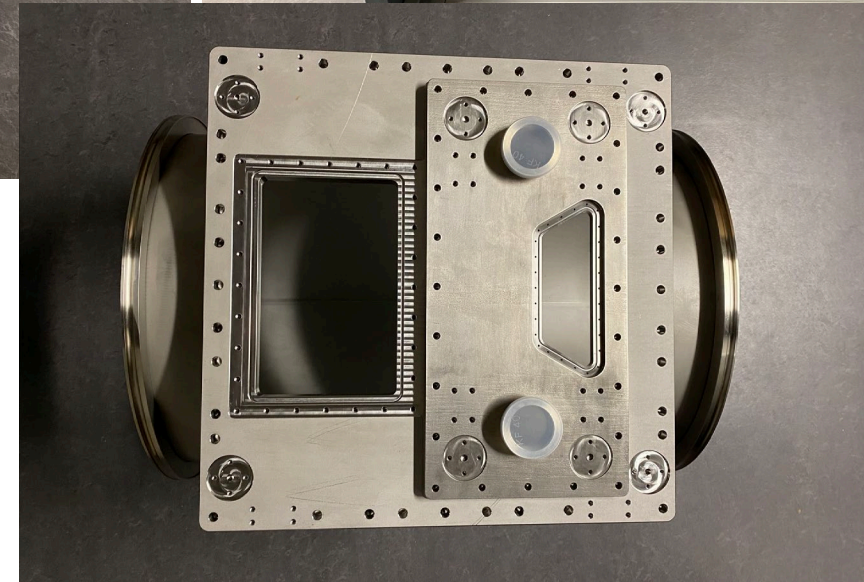
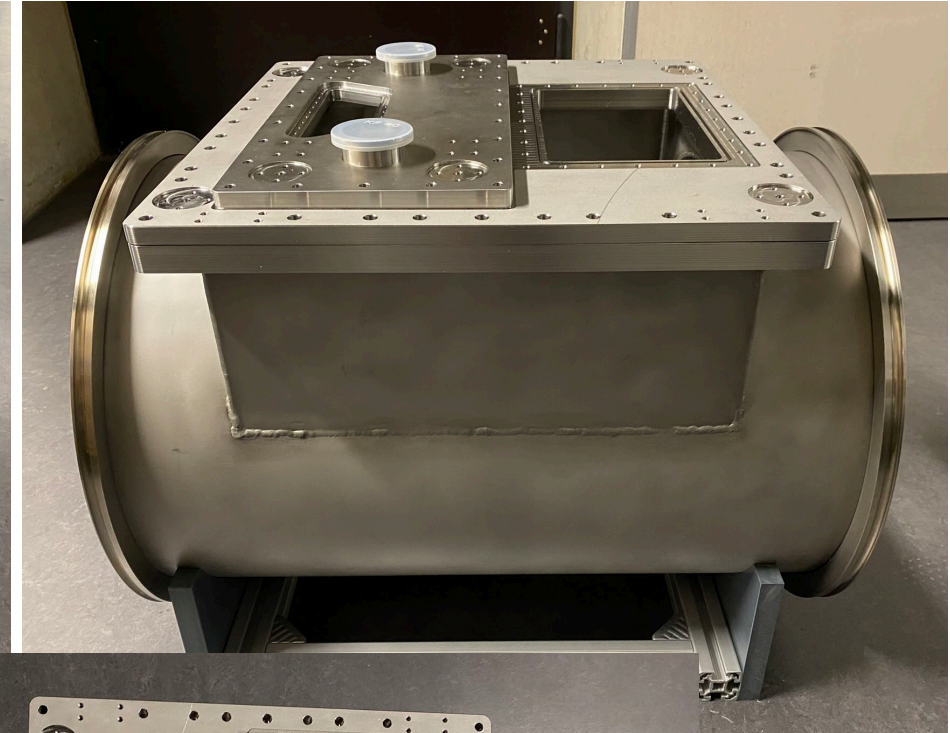
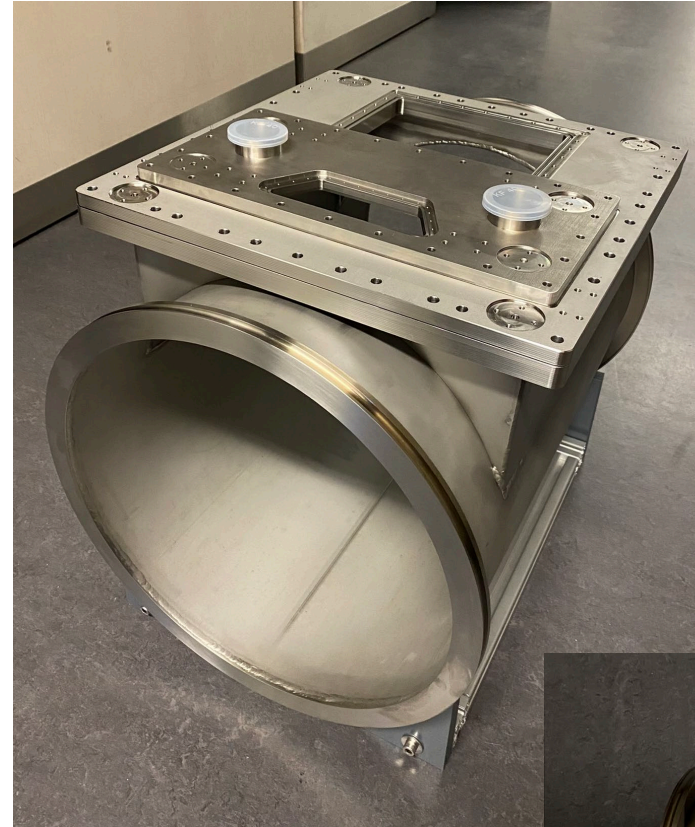
Martin J. Losekamm | Technical University of Munich

Feb 08, 2022



Prototype Vessel for UTS Complete

- Production completed, except for adapter flanges to beamline
 - Interface to beamline still TBD
- Lessons learned:
 - Spot-weld dummy rings instead of ISO-K 400 rings during production
 - Fine-machining of top flange after **all** welding is done
---> last production step
- Leak tests under preparation
- **Production of second prototype will start soon**
 - Incorporate lessons learned into production process
 - Two vessels for testing: one at TUM, one at CERN



- When do we want the (helium-filled) beamline to be in place?
---> When do we need to finalize the design of the beamline?

Open questions from our side:

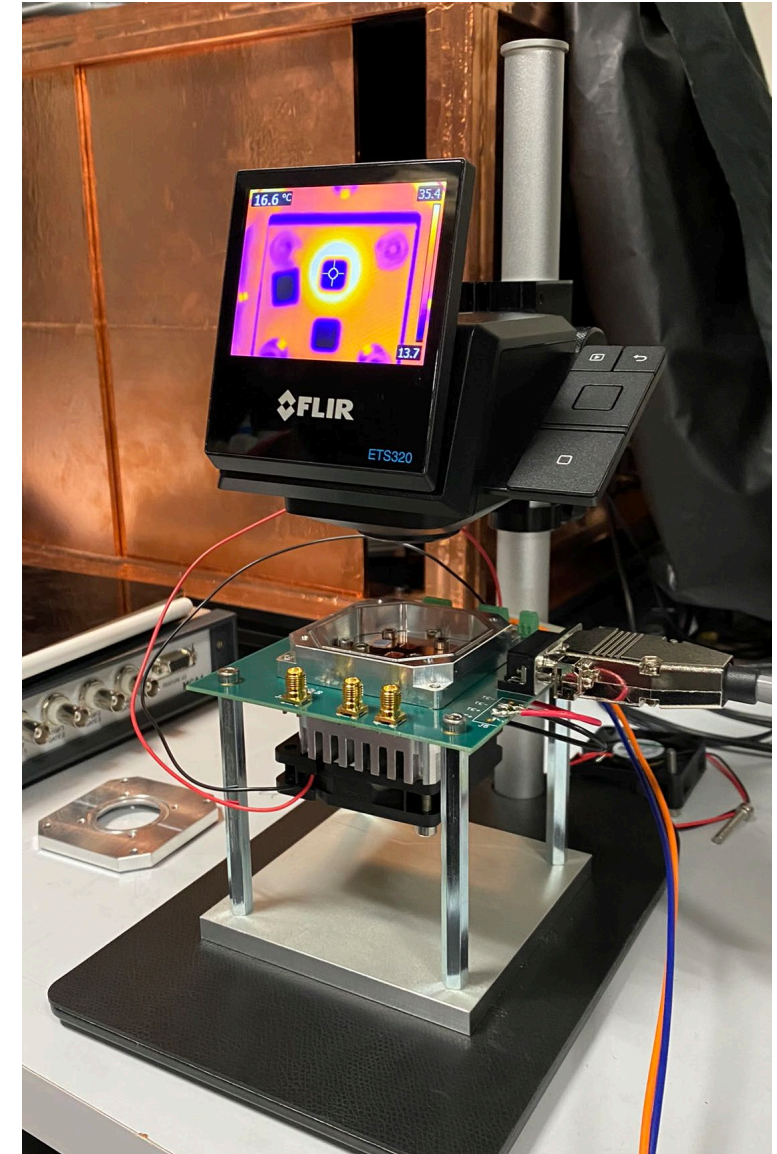
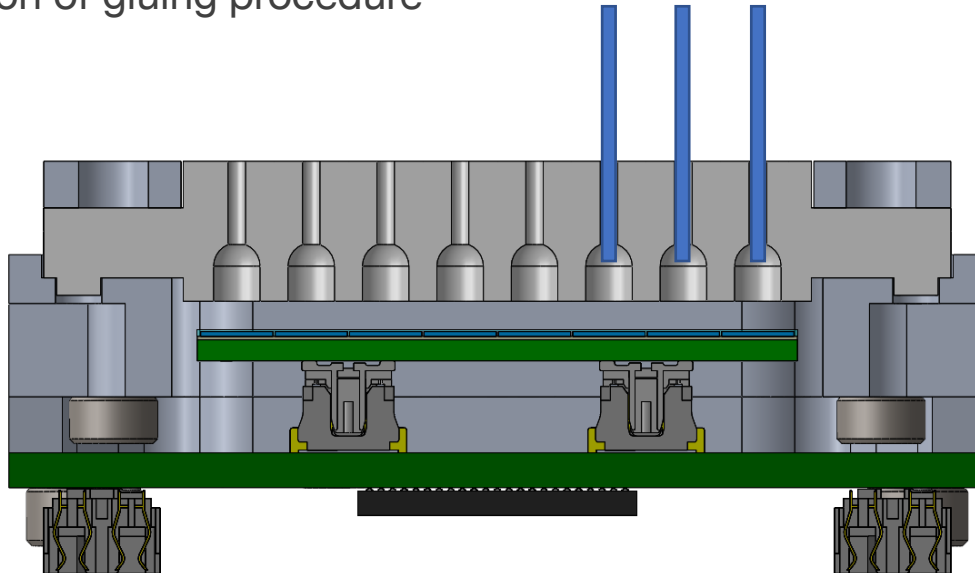
- Layout of beamline / baseline for tracking: tube diameter, pipe sections, bellows (!)
---> Adapter flanges between UTS and pipes / bellows (ISO-K 400 to CERN standard)
- Height of beamline support structures

Of general interest (?): Interface between beamline and TPC

2022 Plan for SFH

Component- and Subsystem-Level Tests Taking place in Munich

- Detailed characterization of temperature dependence of
 - SiPM dark-count rates
 - Coincidence trigger thresholds & rates for two-SiPM fiber readout
- Detailed characterization of fiber light yield
 - Effect of bending fibers as in the current design
- ‘Optimization’ of coupling fibers to SiPM arrays
 - Cutting / polishing (?) procedures for mass production
 - Optimal form of cone / dome in holding structure
 - Optimization of gluing procedure



- **Test campaign #1:** Initial tests of end-to-end light yield
 - Prototype with few channels (likely ~8) to test light yield and coincidence trigger rates in beam
 - Setup as close to final one as possible
 - Target location and time frame: beam-dump area, after beam start

- **Test campaign #2:** Test of full SFH prototype
 - Prototype with all four planes (two X, two Y)
 - 64+ fibers per plane
 - Target location and time frame: beam-dump area, summer/autumn (TBC)

- **Test campaign #3:** Integrated testing of prototype UTS
 - SFH prototype + SPD prototype
 - Target location and time frame: TBD