Update on the g-2 laser calibration system

WP3: g-2 laser calibration system

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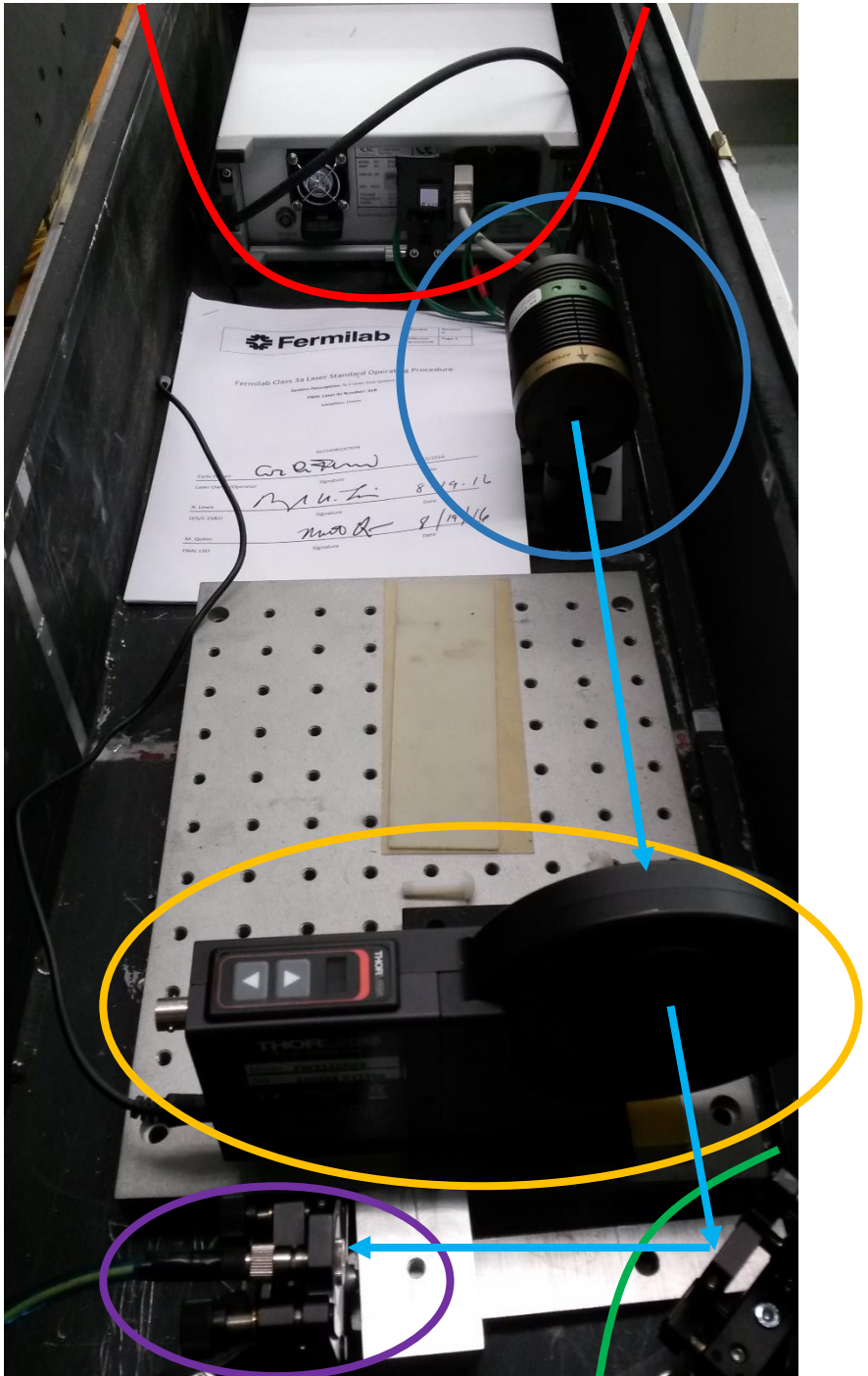
- Test station in Dzero
- Laser hut
- Light distribution panels for calorimeters
- Optical fibers

Test station in Dzero

The calorimeters will be assembled in the assembling room in the Dzero building at Fermilab. After the assembling, the calorimeter will be tested and calibrated using laser pulses.

The laser test station in Dzero has been completed in July.
It consist on a laser head (blue highligh), a power supply (red highligh), a filter wheel (yellow highligh), a mirror (green highligh), a collimator (purple highligh) and a 25 m long optical quartz fiber.
The optical fiber feed the diffuser, which will be embedded in the calorimeter.

The test station has been used to perform the quality control of the optical fiber bundles and of the light distribution panels assembled during the last two months.

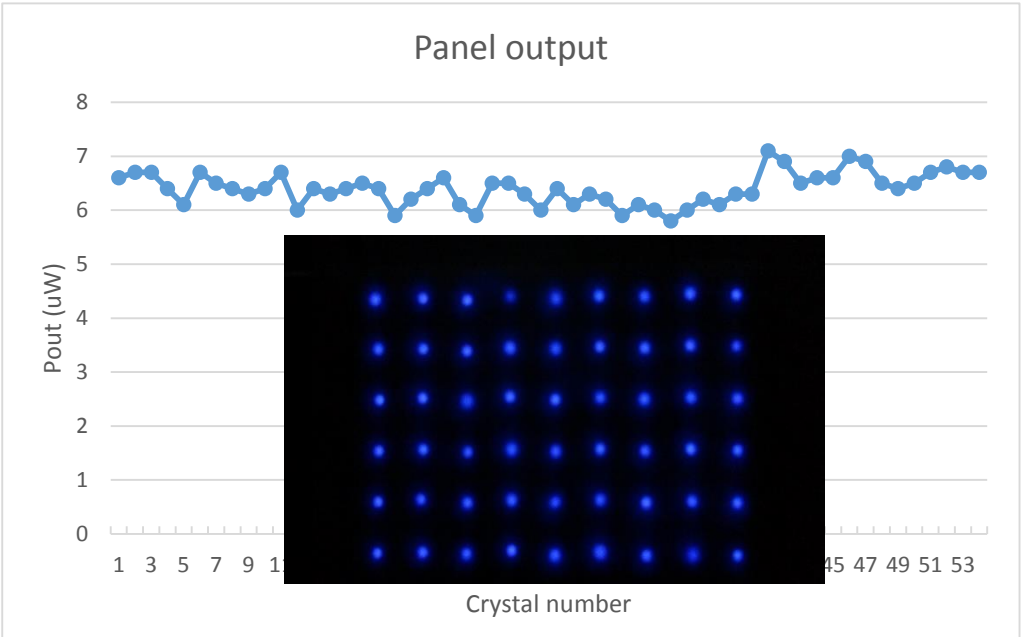


Light distribution panels for calorimeters

The production is almost complete.

- 25 boxes with diffusers ready to be installed;
- 25 Delrin panels equipped with right-angle prisms;
- 6 light distribution panels completed; 7 bundles ready to be installed (within one week) in the boxes; the rest of the bundles will arrive shortly.

The quality control of the light distribution panels assembled were positive.



Laser hut next the ring

Little progress made during the last three months. The main problem is the interlock system, which is mandatory, due the laser power repetition rate capability (80 MHz => 3B class laser).

The lab doors will be interlocked during this week.
The optical table coverage will be interlocked within mid November.

All the optical components for the laser hut are ready to be installed:

- 6 laser heads
- Power supply for laser heads (Picoquant Sepia II), with 6 laser driver boards
- 6 filter wheels
- 18 50:50 beam splitters
- 24 mirrors
- 24 collimators

The construction of the source and local monitors is in progress in Italy.

The waveform digitizer (WFD) is in the computer room of the MC-1 building, ready to be moved in the laser hut.
The computer with GPU suitable to interface the WFD will be purchased next year.
The HV supply for 24 PMTs of the local monitor will be provided by Brendan Casey (until next July).

Optical fibers

(from the laser hut to the calorimeters in the ring)

The installation of the fibers can take place only after the installation of the cable trays inside the ring. The installation of the cable tray started last week, so the effort to start the fiber installation should begin next week.

All the components are available:

- 24 x 25 m long quartz fibers
- 72 x 25 m long return fibers in quartz and PMMA
- 1200 feet x protective corrugated tubes

6 corrugated tubes have already been loaded with fibers.

Conclusions

There has been some delay in the installation of the G-2 experiment:

- The laser hut is not yet ready;
- the assembling of the calorimeter has been delayed by two months (September to November).
- The installation the cable trays has been delayed by three months (August to October), and is currently under construction.

These delays have delayed the installation of the laser calibration system. However, almost all the components of the laser calibration system are at Fermilab and are ready to be installed.

Construction of source and local monitor and electronics is ongoing in Italy.