

# **Status of the ECAL Monitoring Laser System**

**The Caltech Laser Team**

October 2014

# New hardware this year

**Ecal-laser-room-02** : laser control

**Ecal-laser-room-05**: spare laser control + fast monitoring

**vmepc-ecal-laser-01**: laser supervisor

**Ecal-laser-room-09**: spare laser supervisor to be upgraded

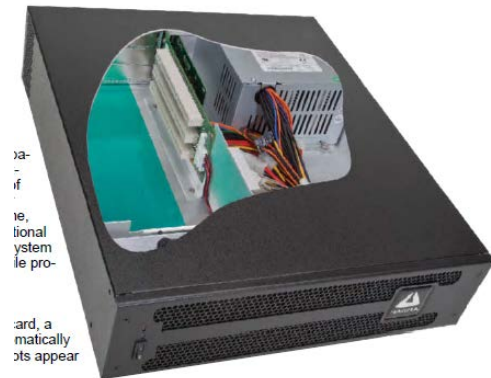
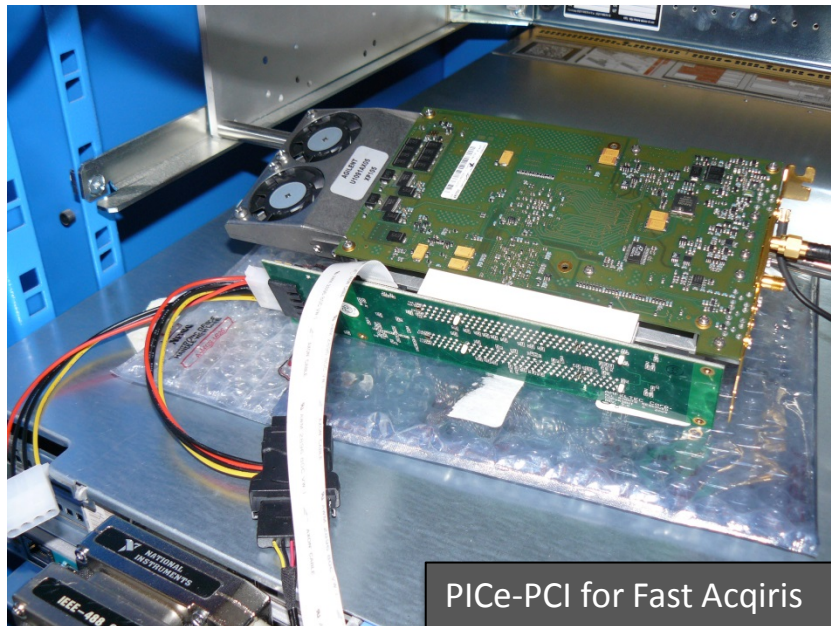
**Ecal-laser-room-03**: light checker monitoring. Desk PC. Will try to run on rack PC.

## New fast monitoring is now OK on rack PC:

-> problem of stability with DC power supply from MBoard & PCI expansion.

(PCIe interface on DC connector not supported by Dell...)

-> can test and use a more robust PCIe expansion (Wuntronic) already in used at CMS but ~1500euros...



# Laser DAQ

## Laser DAQ:

- Normal configuration -> **DP2 + green + IR\***
- Can be changed from one DP2 to another on request before a run: DP2-1 or DP2-2

DP2-2 is used since April. DP2-1 before.

## Last configuration DP2-2:

**35A@3%** internal attenuation → ~1000 ADC on Matabq, since April.  
attenuation changed from 50 to 3% because of saturation up to now  
But Last MWGR: low amplitude on APD now, x2 ?

## Command from calibration sequence:

1. Wavelength 440/green/dp2/800 (0/1/2/3) → 440 is old blue, option still available by replacing it with the IR laser (HW+SW)
2. Energy dB → always 0 dB for all lasers (0-10-20-30-40-50 dB)
3. Energy 0-99%
4. Chan 1-99

**\*IR laser** : old laser and its use needs to be rationalized

# Status of the 1<sup>st</sup> DP2-447 (s/n 11-381)

**Laser error, 22 Sept: “Temp SHG error” , Cannot turn laser ON anymore.**

2 crystals are under temperature control : SHG & THG. SHG was now unstable and out of limits (+/- 2.5Deg)

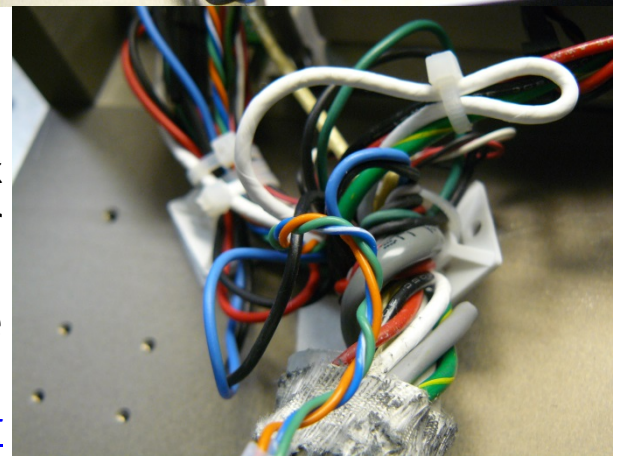
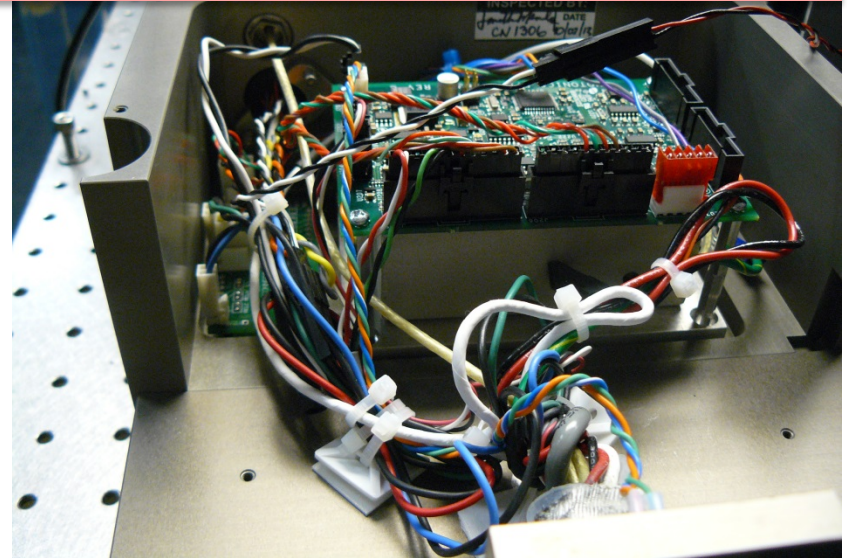
-> Problem solved following help from Photonics: faulty connection because of an unglued cable tape fixation.

→ already notified this temperature instability since February !  
SHG +/- 0.3deg but no effect on pulses and thus no recommendation or action.

## **Another feature:**

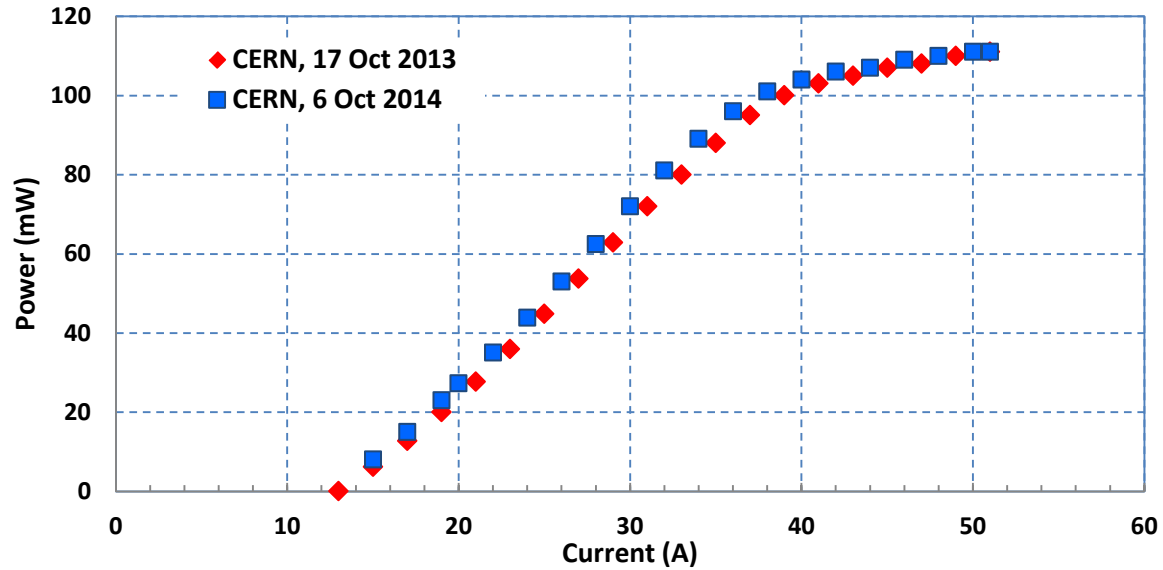
there is an abnormal water consumption since July : water tank empty after 3-4 days time to time (water flow error -> laser stopped)

Investigation ongoing. Found already that the filter on the pipe was in wrong direction which explained trouble in Oct 2013 when we received laser from Photonics: got low flow error ([OM 15 oct 2013](#))



# Lasers good health check

## The 1st DP2 laser (SN:11-381) output power



## The 2nd DP2 laser (SN:12-658) output power

