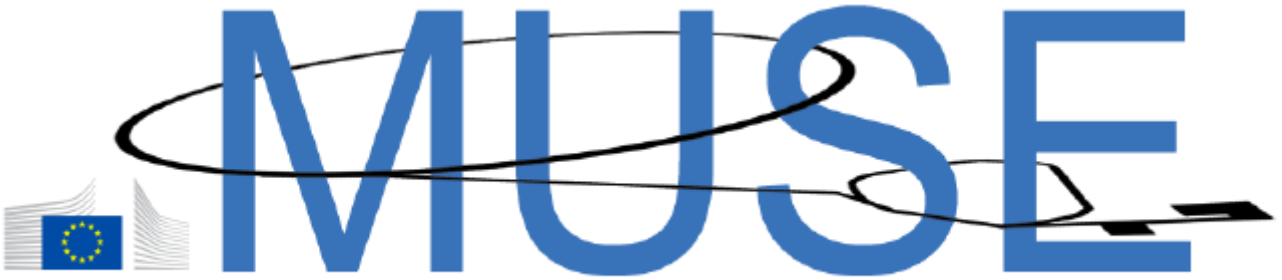



# Data Quality Monitor of the Laser Calibration System in the g-2 experiment at Fermilab

A. Gioiosa INFN Sezione di Lecce

MUSE Mid-Term Meeting Frascati, 12 May 2017









# g-2 Laser Calibration System

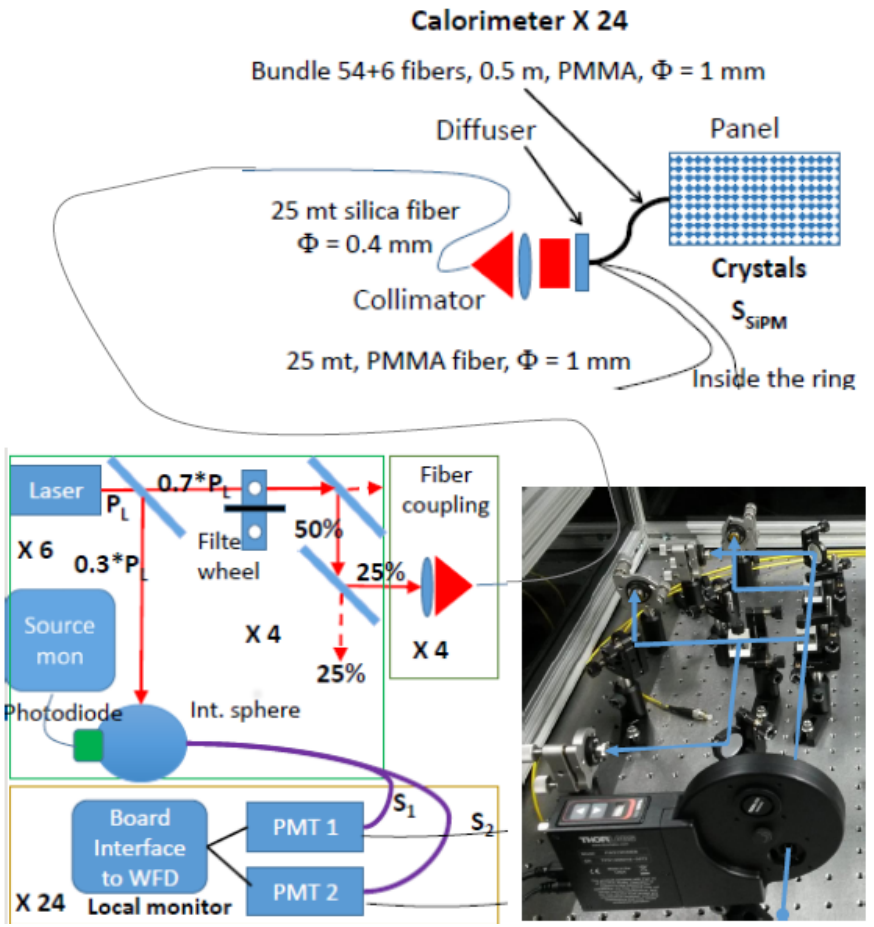
**For each of 6 lasers**
**We are interested to monitor:**

- **1 Source Monitor (PMT and 2 PIDs)**

**pmt pids-sum pids-ratio**

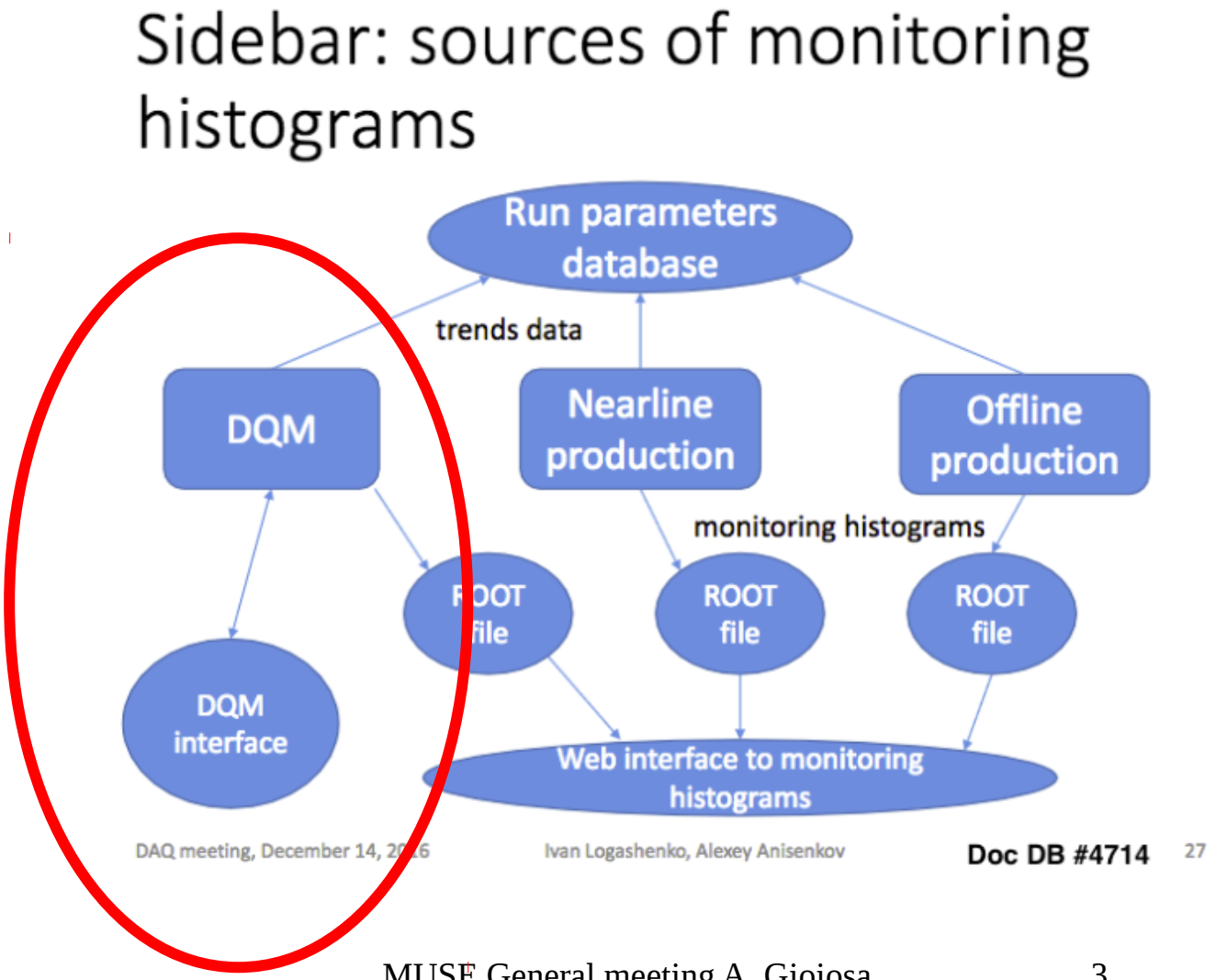
- **4 Local Monitors (2 fibers as input of each PMT)**

**2 pulses ratio**

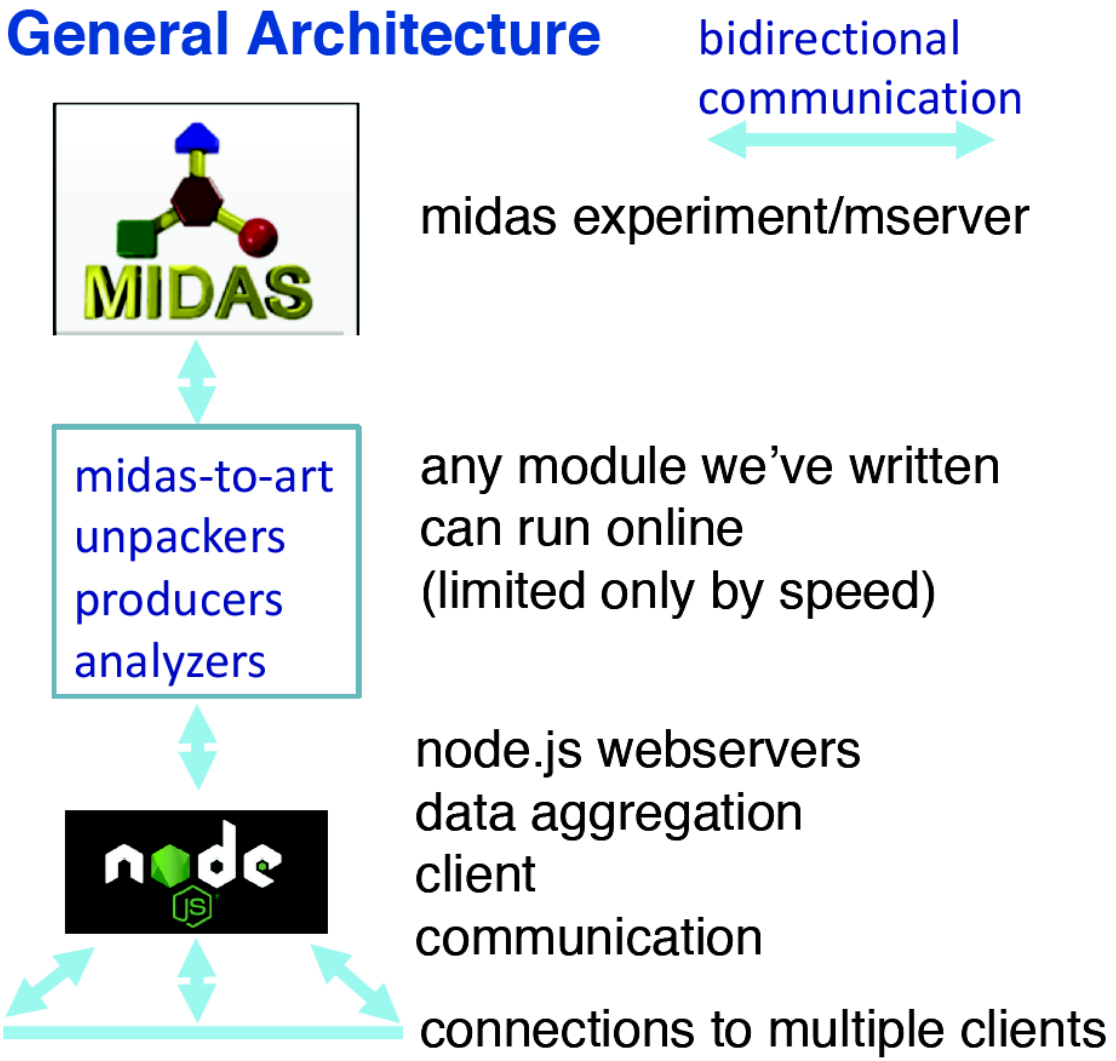



**Courtesy Carlo Ferrari**

# g-2 Online monitoring



# g-2 Online monitoring



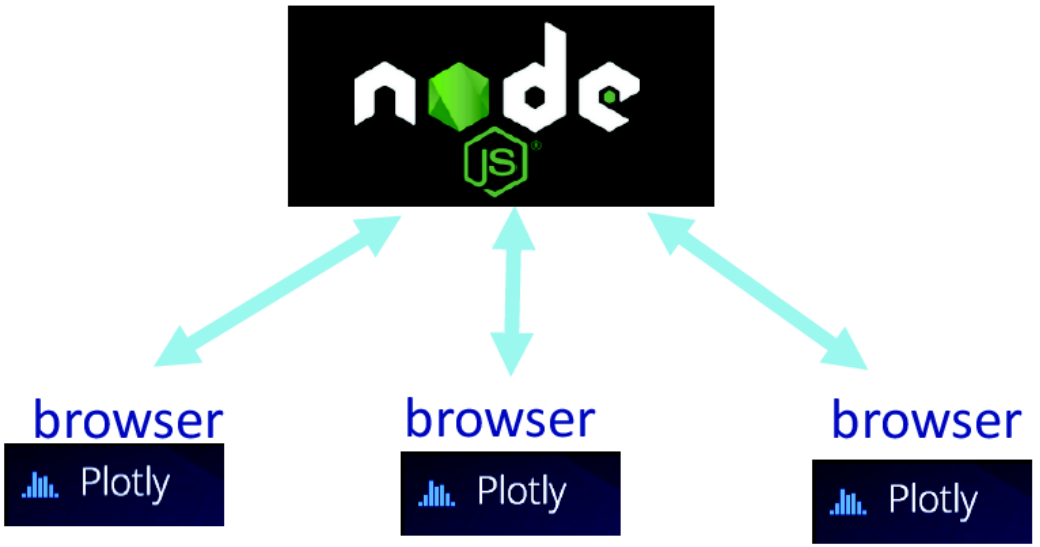

Courtesy
Aaron Fienberg

# g-2 Online monitoring

## Getting data out of the art job with ZeroMQ messaging library


zeromq.org

## node.js webserver



# g-2 Online monitoring

## ALARMS

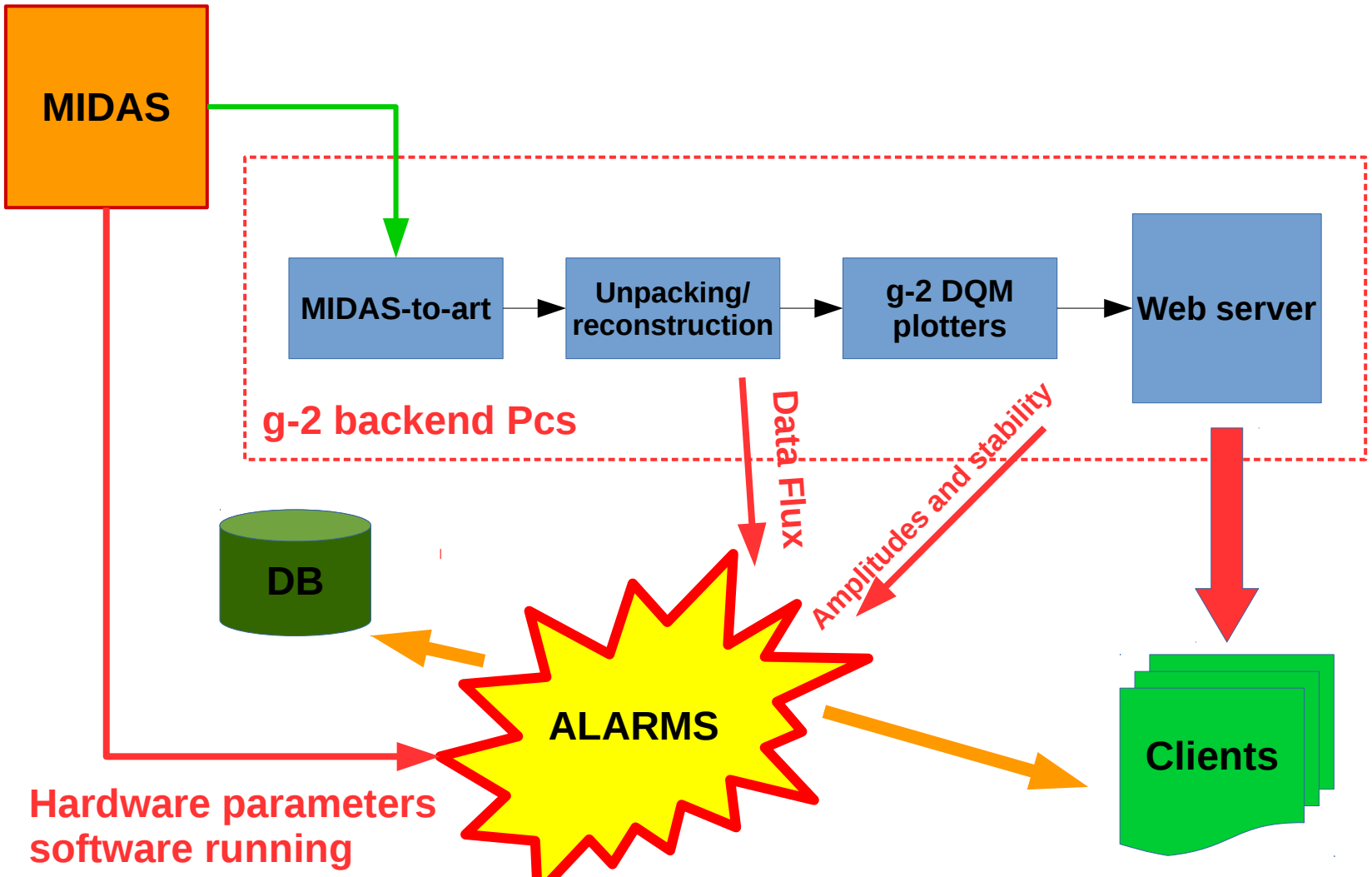
- **Internal Alarm checks run inside a process**
- **Program Alarm triggered when a Program is not running**
- **Evaluated Alarm on a threshold condition**
- **Periodic Alarm periodically activated according to a time interval**

**Alarm Message**

- **destination: (to system message log, to DB system, to elog)**
- **Alarm Alerts: visual, audial, email, SMS**

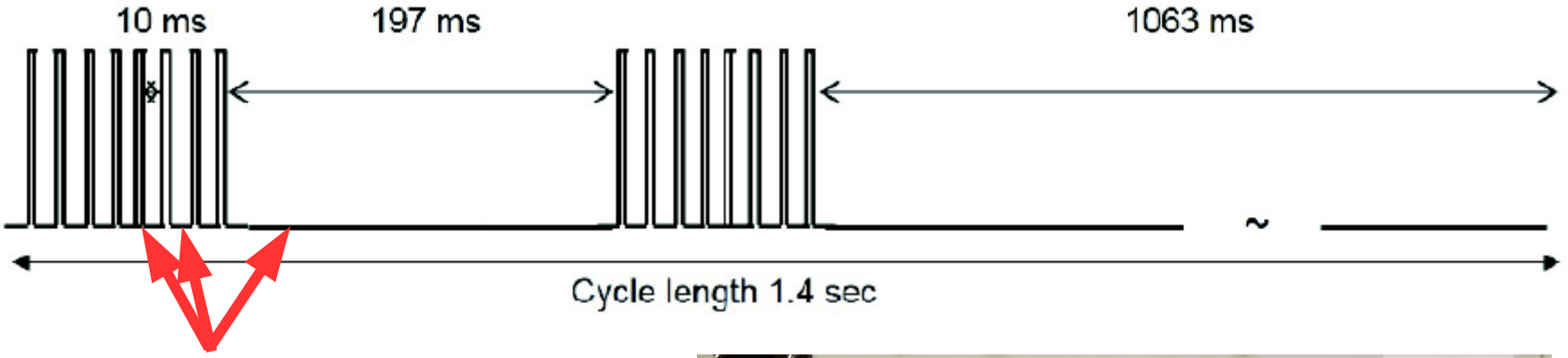
**Courtesy Nikolay Khomutov**

# g-2 Online monitoring



# g-2 Laser Calibration System online monitorig

## Experiment supercycle

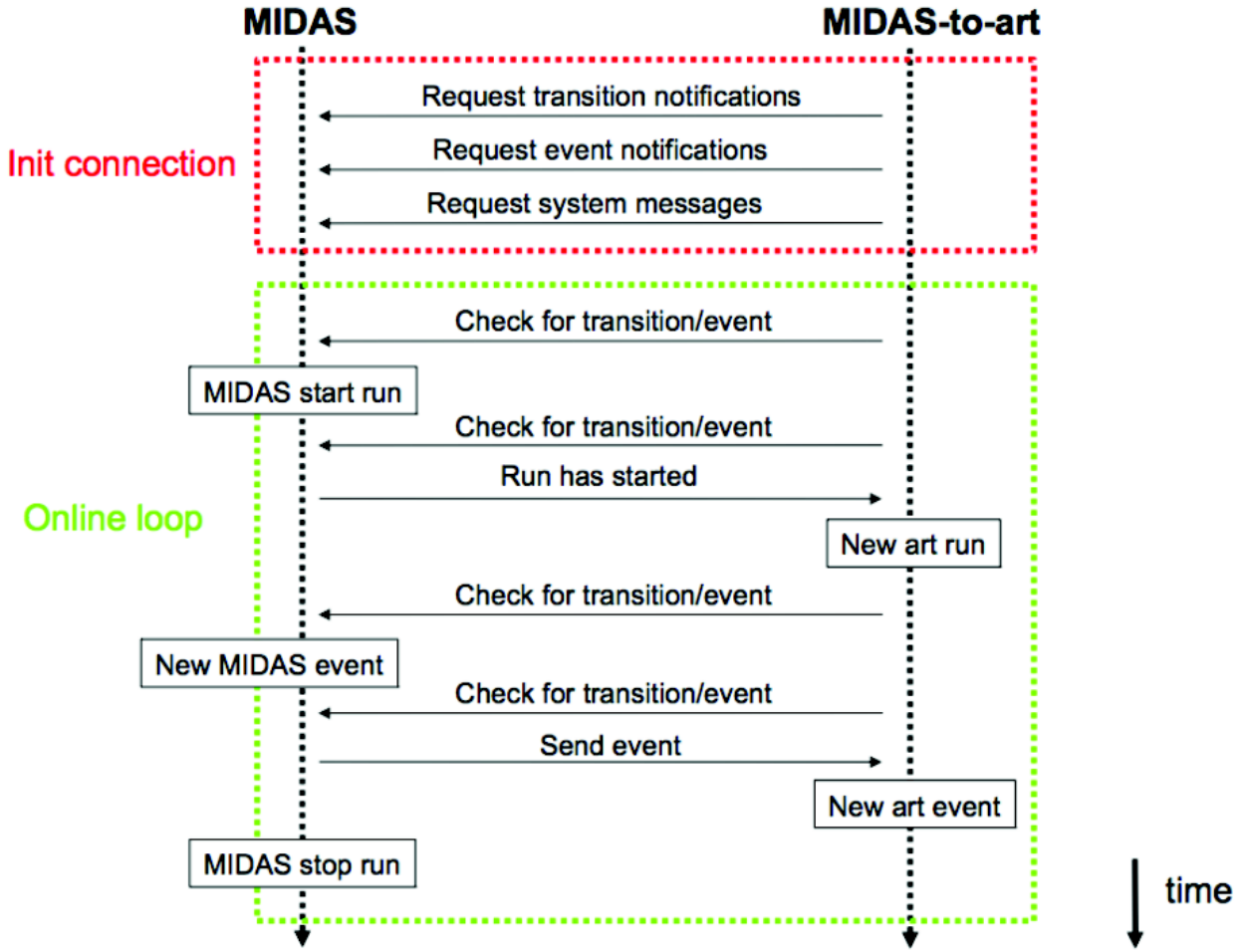



**Laser pulses inside and outside the muon fill time windows**

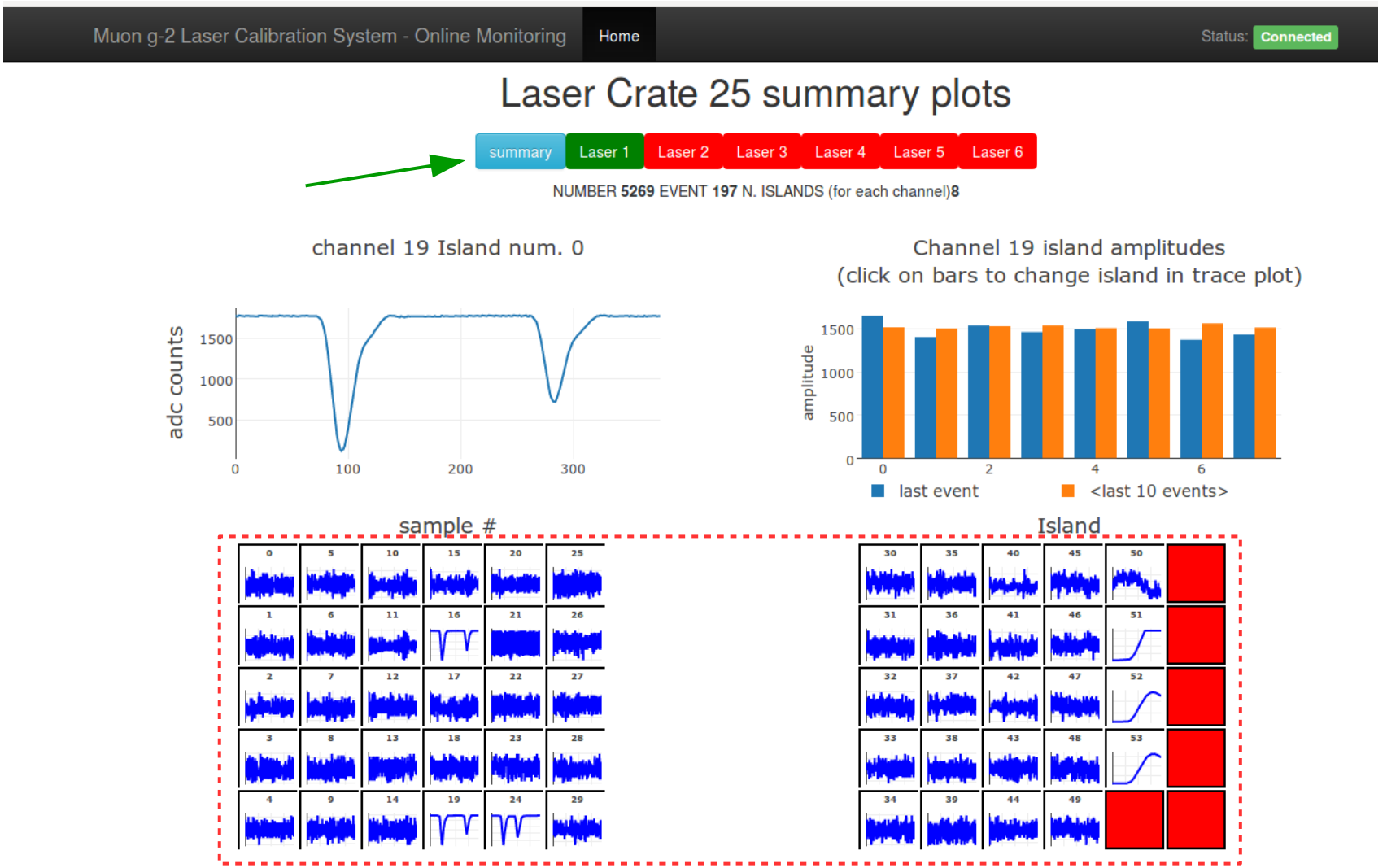
## Laser Crate WFD

# g-2 Online monitoring

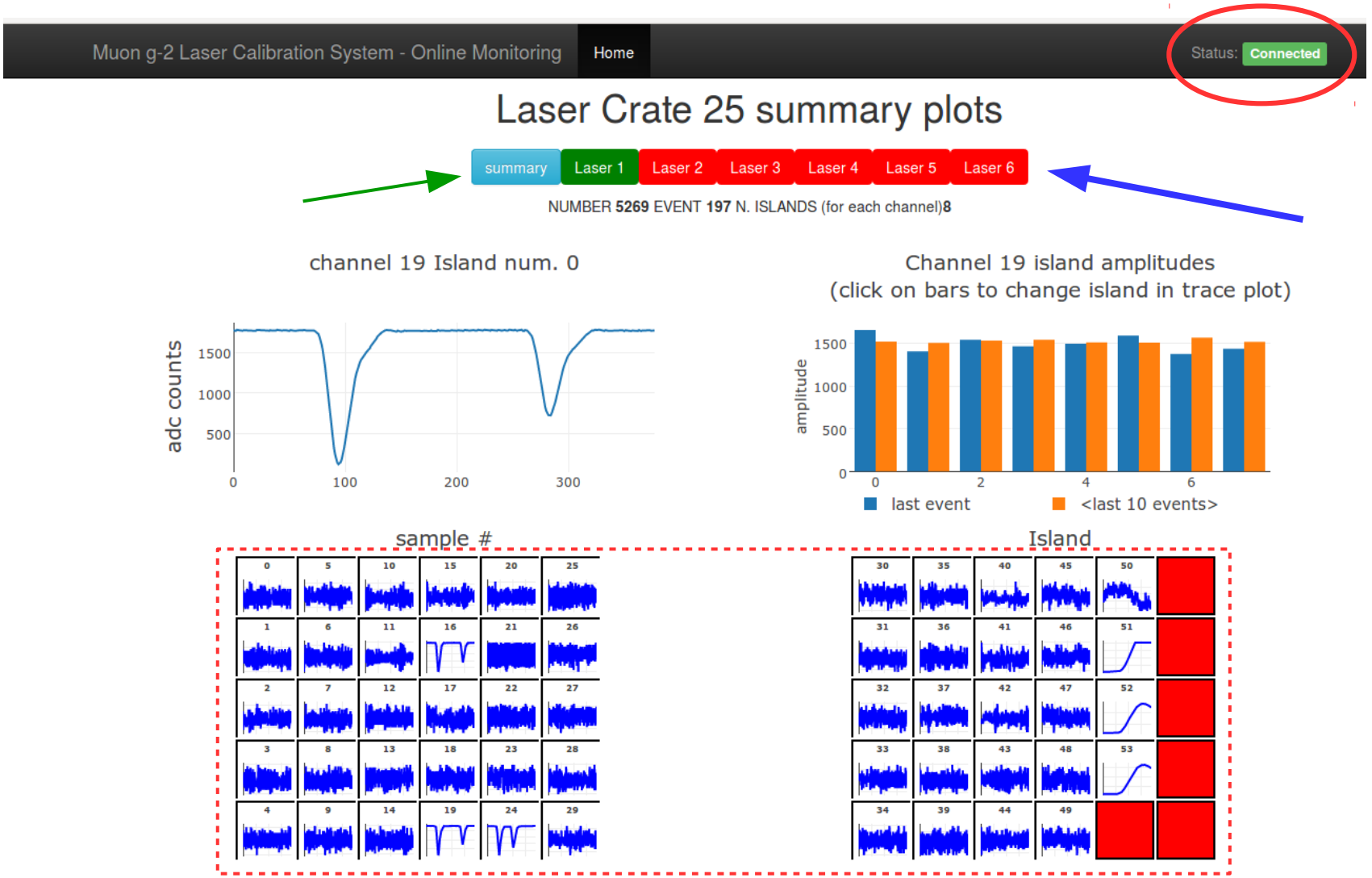
## midas-to-art online system



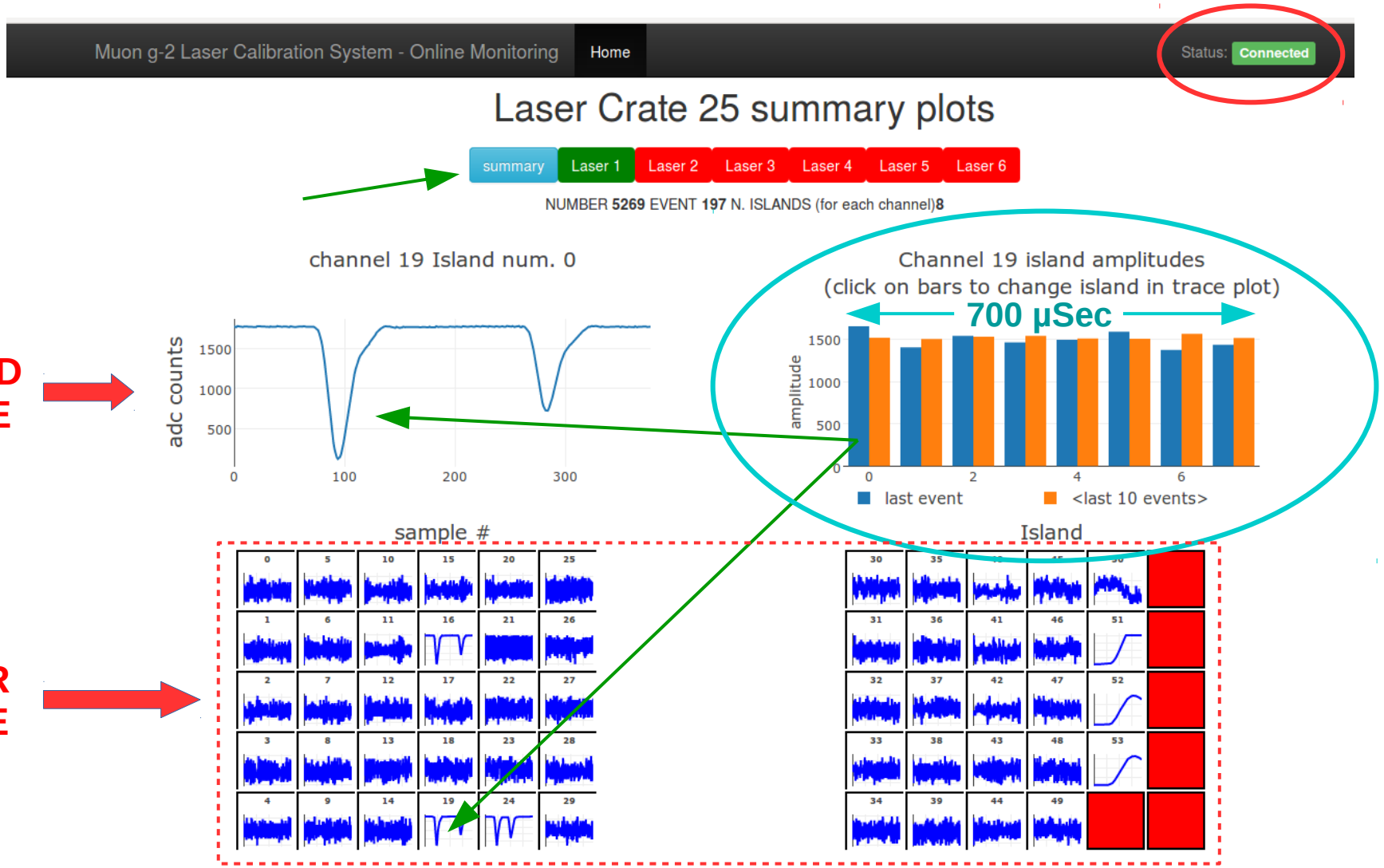
# Laser Calibration System Online Monitor - Web Interface



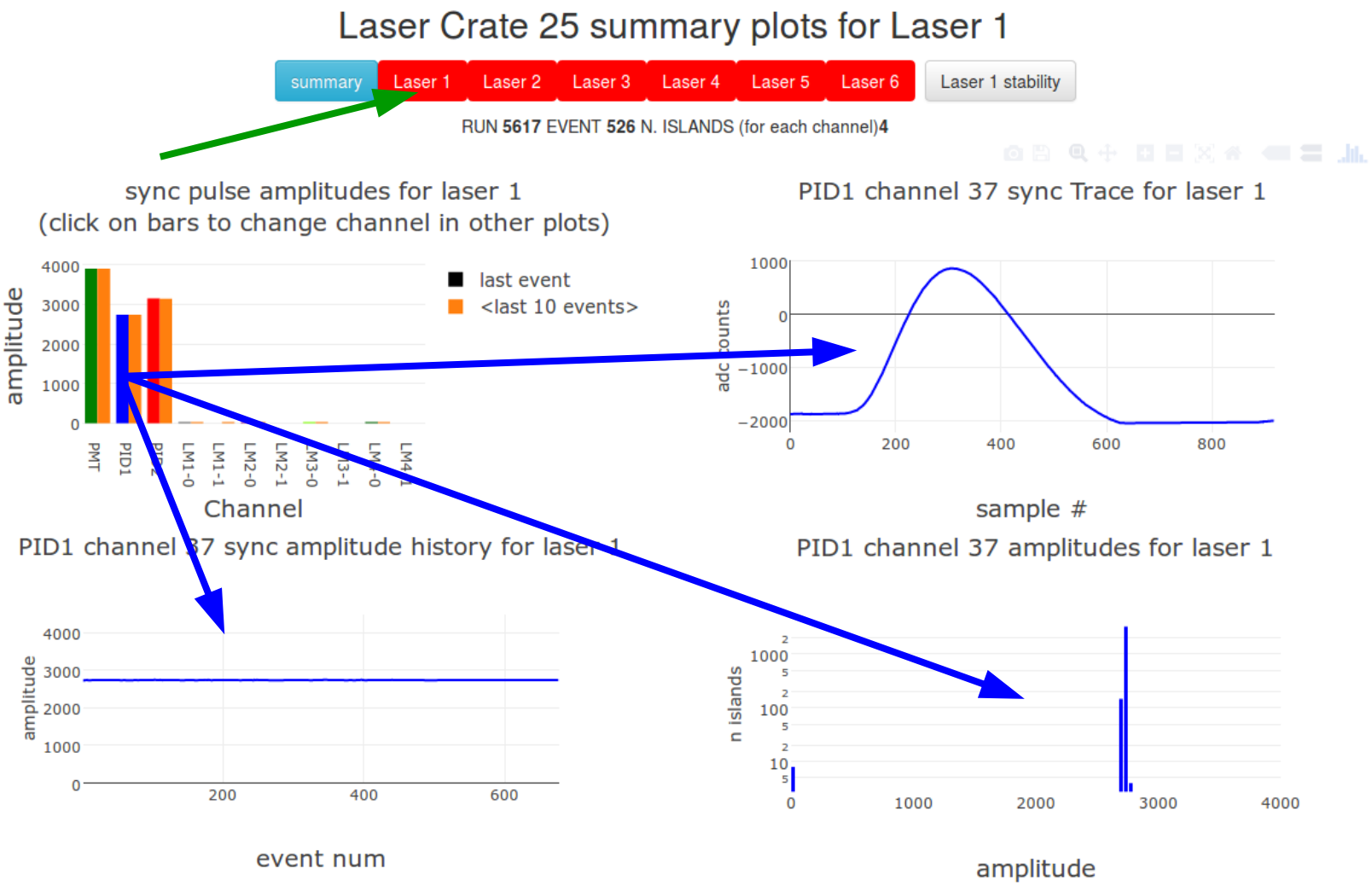
# Laser Calibration System Online Monitor - Web Interface



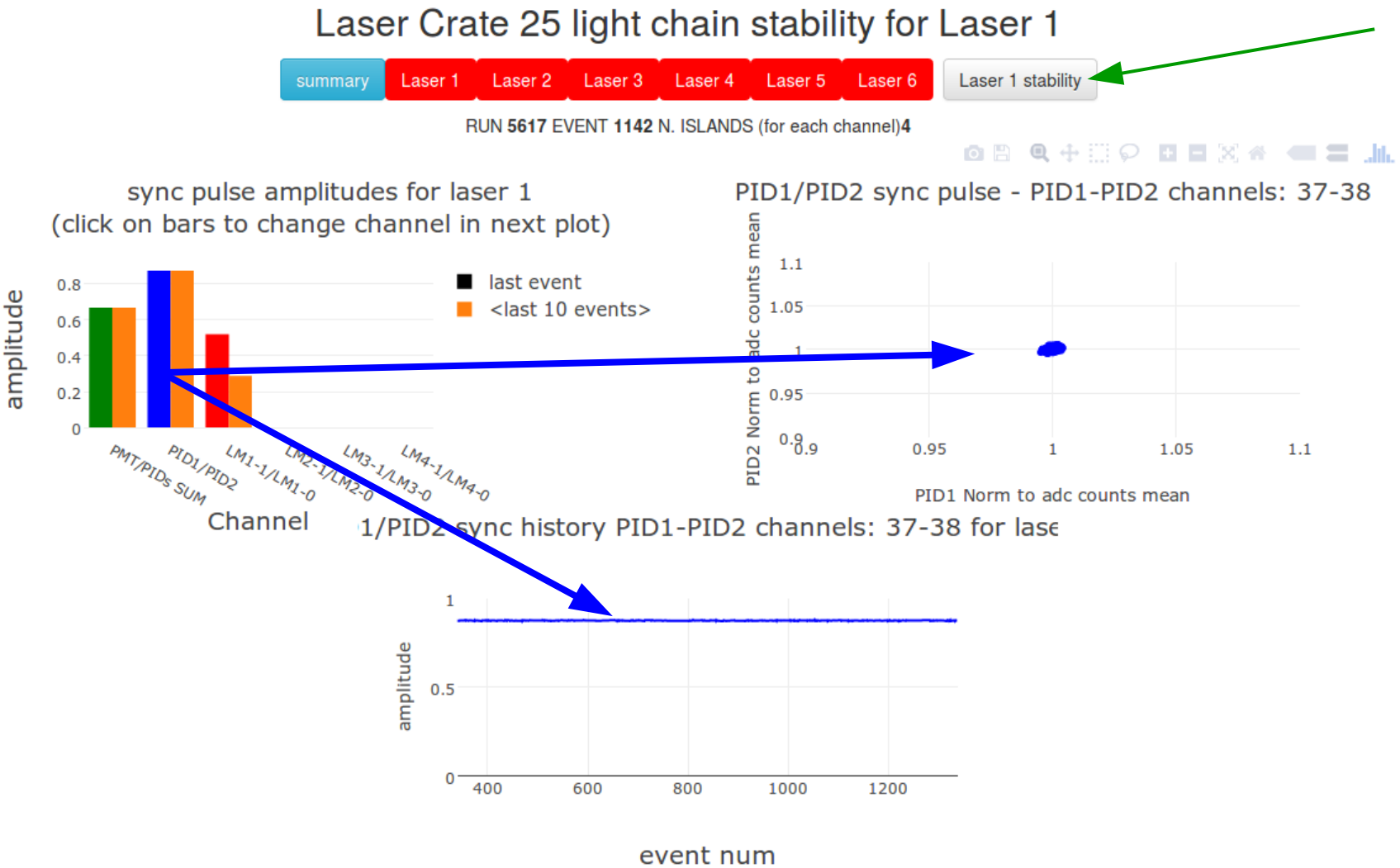
# Laser Calibration System Online Monitor - Web Interface



# Laser Calibration System Online Monitor - Web Interface

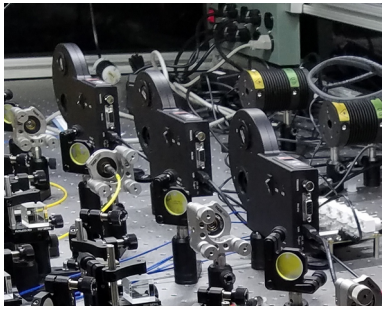


# Laser Calibration System Online Monitor - Web Interface

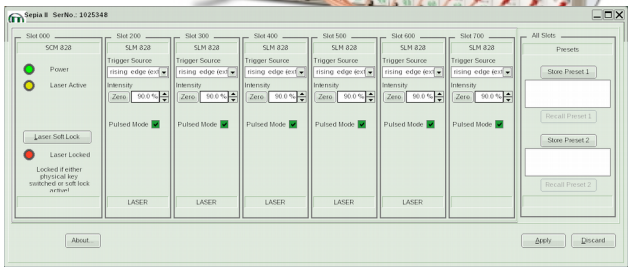


# Others laser control and monitoring softwares

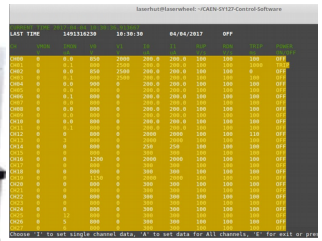
- **Filter wheels**



- **Laser Driver**



- **Local Monitors HV**

# Laser Calibration System Online Monitor

## Summary

- **With the Laser DQM On-line Monitoring we can follow the status of:**
- **Server connection**
- **Trace of each laser channel**
- **SM and LM of each Laser System**
- **Stability and time history of Laser System over the runs**
- **Alarms**