## Fermiab Laser Calibration System For The Muon

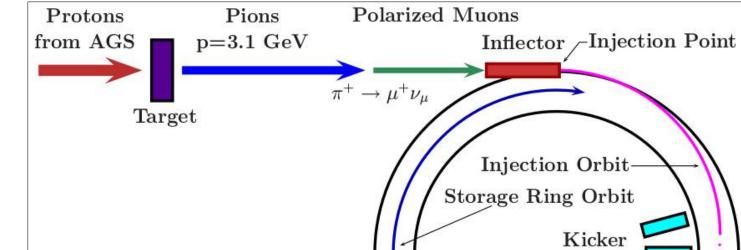
# g-2 Experiment

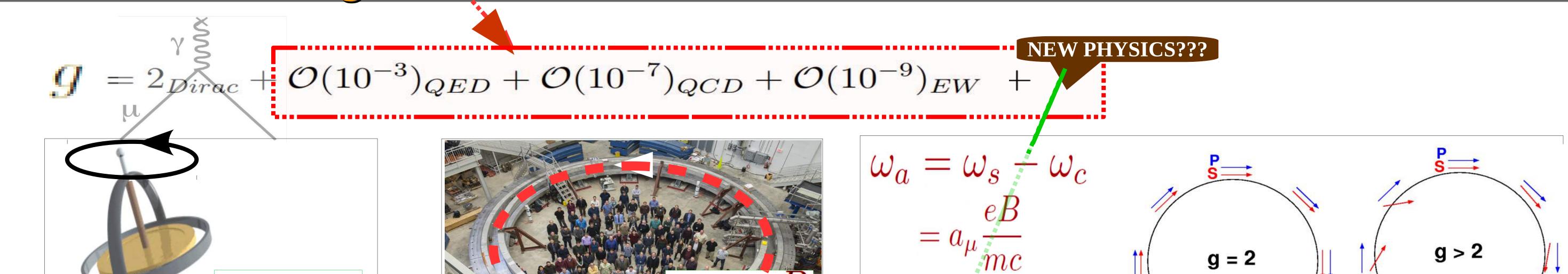
Atanu Nath On behalf of the Italian collaboration

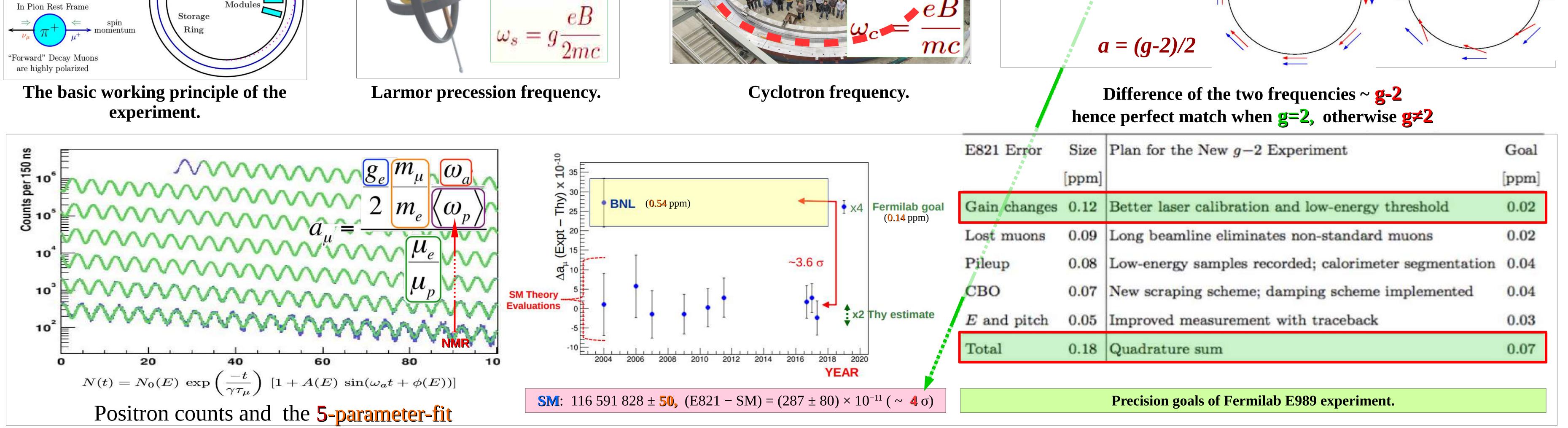
## GENERAL g-2 EXPERIMENT BACKGROUND

Spin and magnetic moment

$$\vec{\mu_S} = g \frac{q}{2m} \vec{S}$$

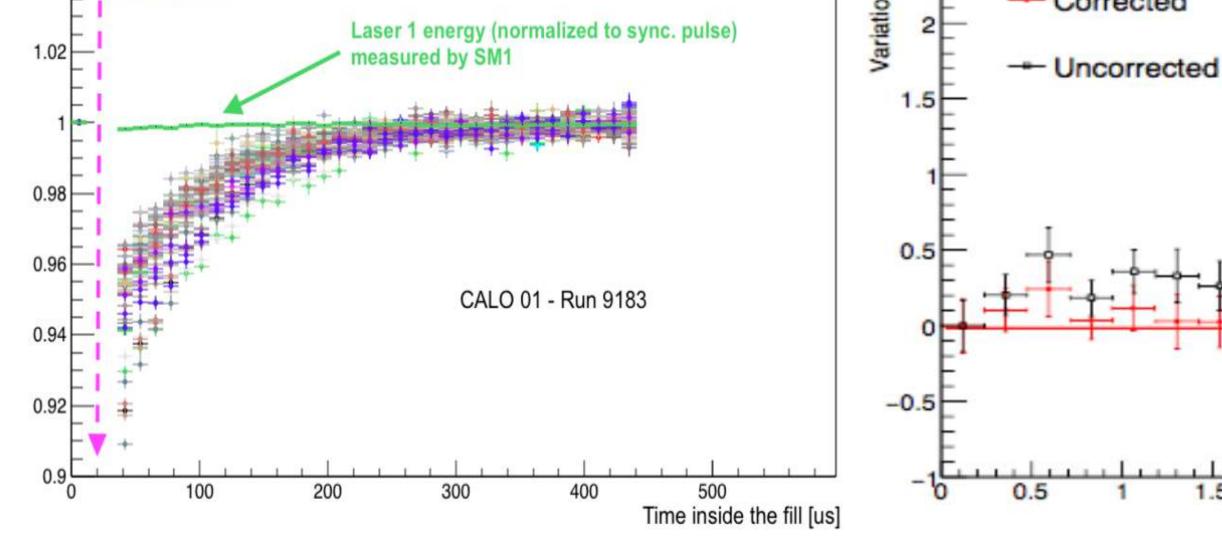






### GAIN SAG AND THE LASER CALIBRATION SYSTEM

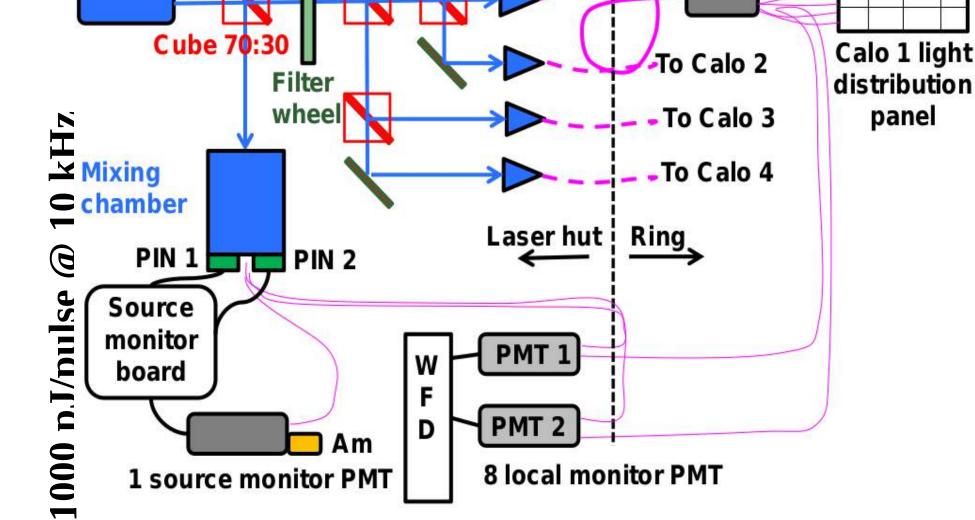




4.5 Time (hours)

Calorimeter gain-sag function obtained using laser pulses that simulate positrons.

For long term stability of the calorimeter gain, laser pulses are used to correct it.

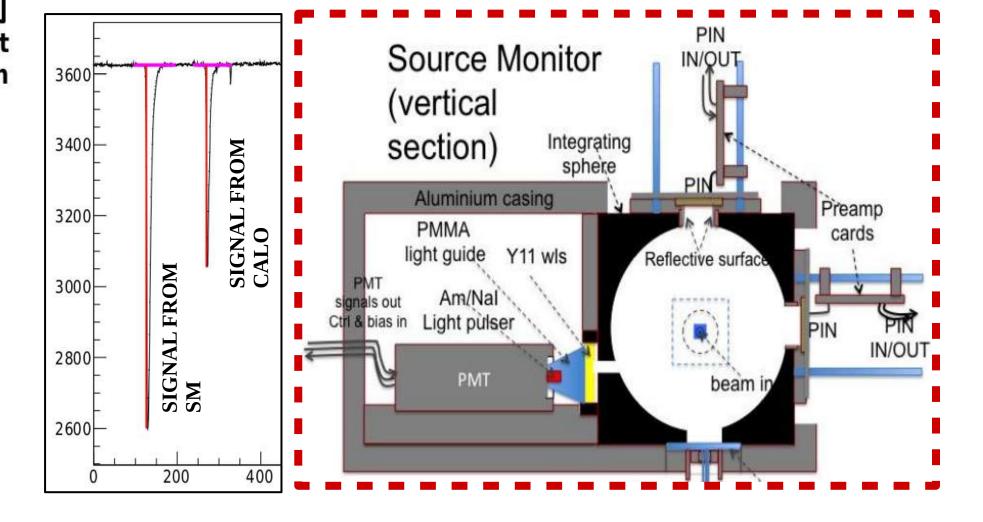


Schematics of the laser calibration system.

NAPLES DAQ SM MONITORING PAGE

3/30/2018

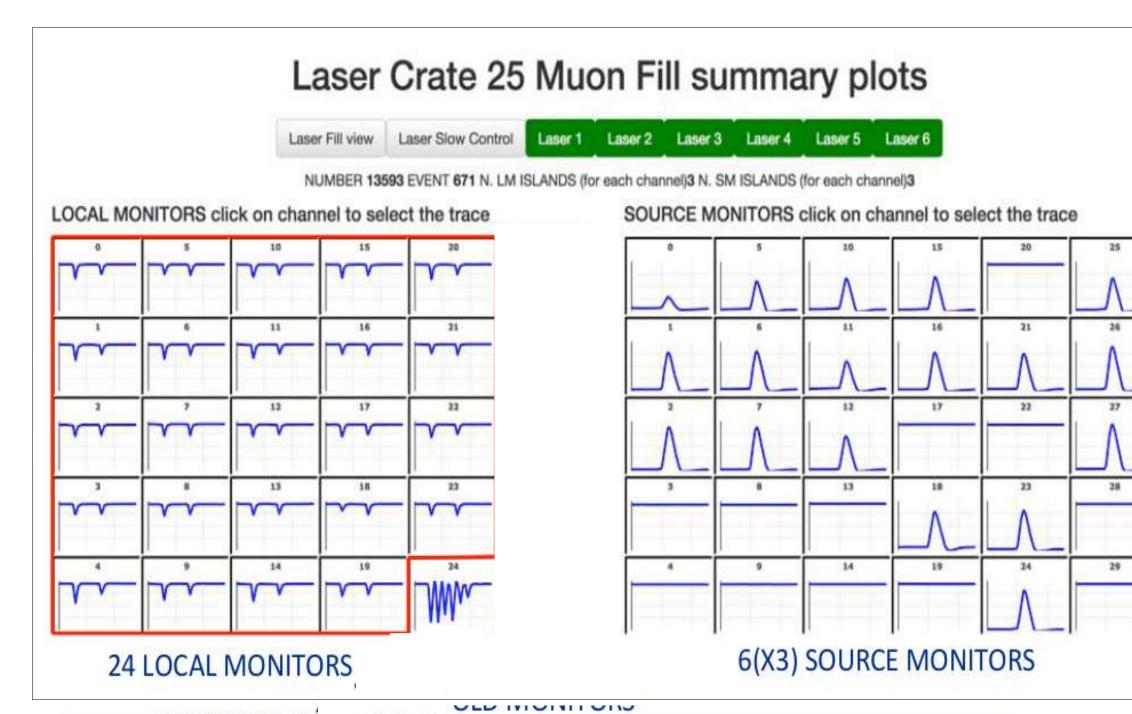
panel



Local (LM) and Source Monitors (SM) are used to monitor the stability of the calorimeters.

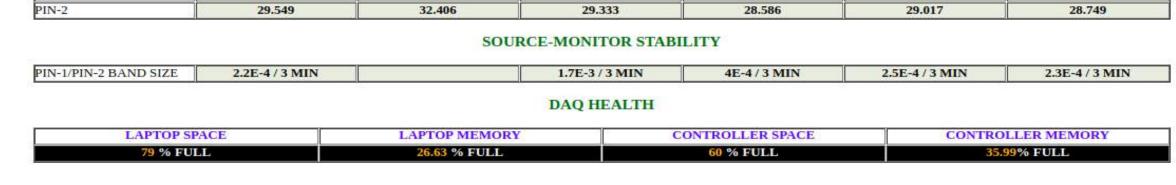
## LASER CALIBRATION MONITORING SYSTEM & PERFORMANCE

#### ONLINE SM AND LM TRACES

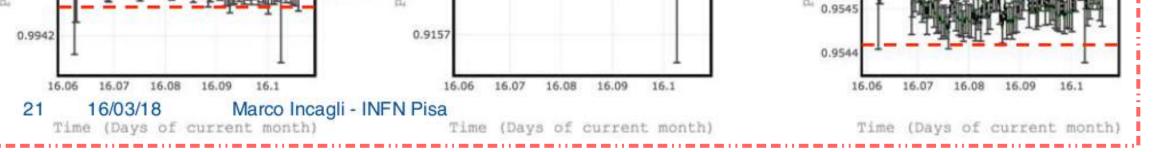


		м	Ion Apr 2 18:32:01 CDT 20	18				
		Home Summary St	ability Short Term Profiles	Long Term Profiles				
MIDAS DAQ	NAPLES DAQ	MONITOR STATUS	DATA STATUS	LASER STATUS	LASER MODE	FILL RATE		
UP (N. 14521)	UP	UP	GOOD	UP	STANDARD	20 / sec		
	SM-1	SM-2	SM-3	SM-4	SM-5	SM-6		
EAN ADC								
N-1	6926.05	NAN	5024.95	6831.37	6522.47	8072.15		
N-2	8030.73	7855.17	6118.76	6870.59	7121.44	8447.37		
MT	11825.7	4411.33	5071.43	5534.12	6377.26	5200.35		
EAN BIAS (V)								
N-1	49.2142	49.2329	49.1669	49.2906	49.4113	49.5373		
N-2	8.303	49.2813	49.2954	49.0599	70.2318	49.3213		
MT	0.6352	0.535	0.5966	0.6901	0.6497	0.5945		
DARD TEMP (°C)								
N-1	41.025	46.732	41.939	41.984	40.766	40.446		
N-2	37.932	41.255	40.473	39.594	38.587	39.71		
MT	41.548	43.128	41.671	41.923	41.548	40.692		
SP TEMP (°C)								
N-1	33.605	33.183	33.448	33.484	34.026	33.307		
N-2	33.628	33.69	33.847	33.827	33.564	33.519		
TTT	34.153	33.003	33.189	33.393	33.69	33.886		
XT TEMP (°C)				2h 0				
N-1	29 676	29.945	78 029	20.042	20.19	29.456		

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							BIAS BT CT							1000 3600		
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0.9944		Lather the state	lun.	±1e-4	+ H 0.915	8 1		1.			Lin on	545	南	E L HIL		陆



#### **Real-time summary of all the measured quantities.**

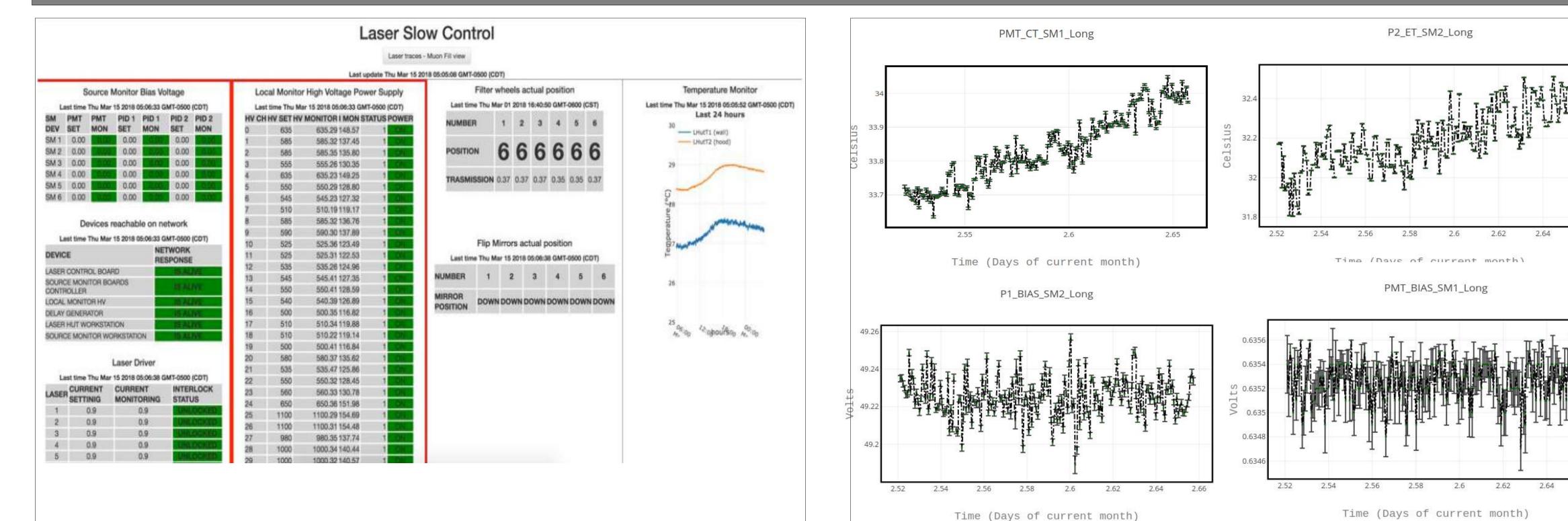


#### **Real-time ratios of the Source Monitor Pin diodes**

COFCIAL DAAT 

0 10 0 10 Marsa Issaali INEN Dis

#### **SLOW-CONTROL (Temperatures, Biases and High Voltages) MONITORING**



#### STABILITY OF SM STABILITY: BATIO FLUCTUATIO

