

SiPM Studies

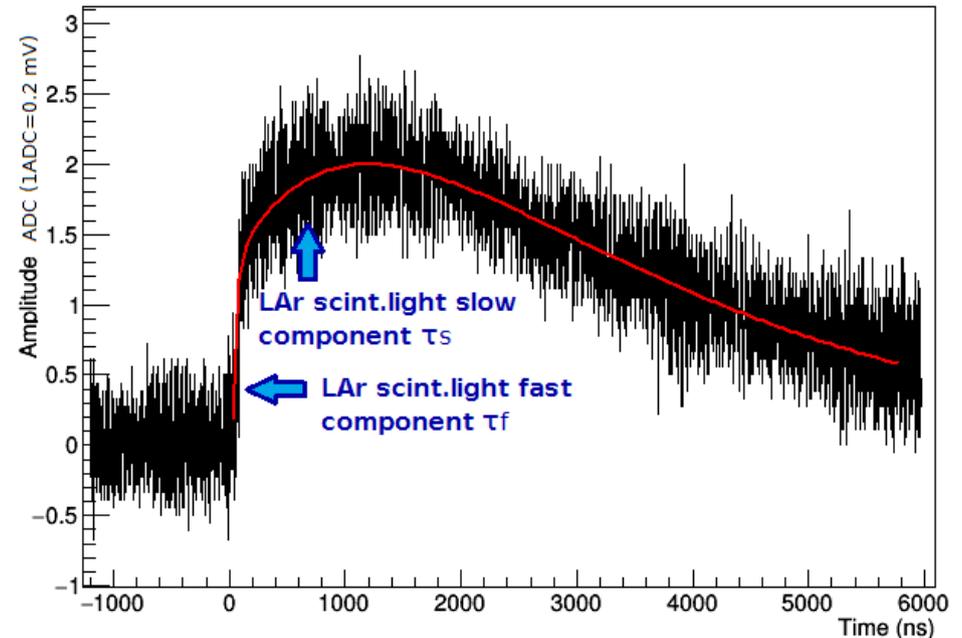
SensL SiPM in the cryostat

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Flavio, Will, Johnny, Pawel

SensL response to LAr scintillation light – for Cosmics (CosmicOn Trigger)

- No preamp (OPA 656 powered off)
- Preamp ON (OPA 656, powered at +/- 8V)

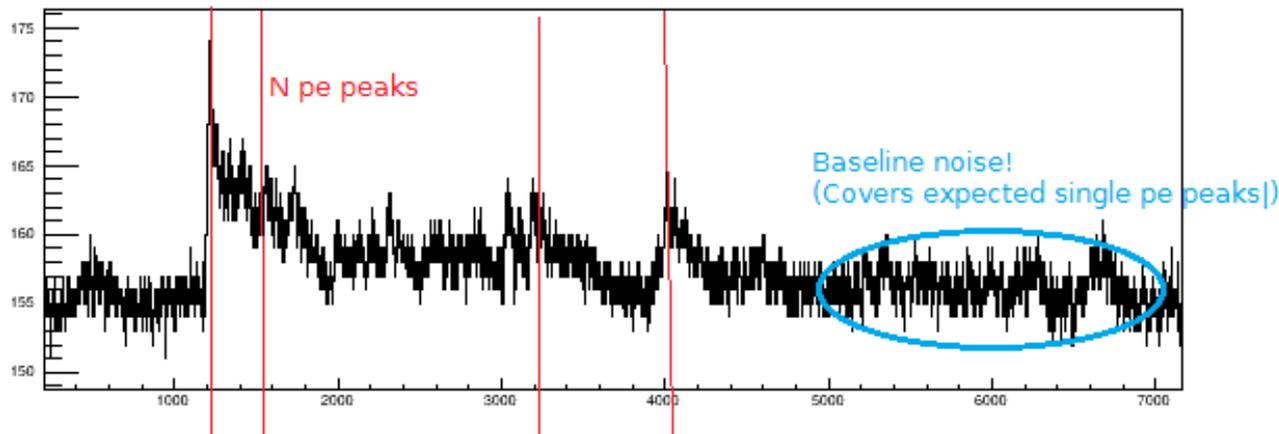
AvgWfmSensL CRinLAr + Fit (Convolution: LAr+TPBscint & SiPM response)



- Single wfm -

SensL SiPM +PA Run 5604

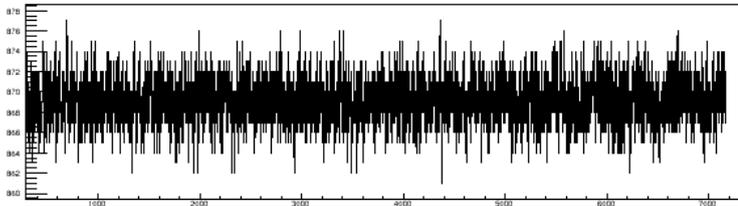
SiPM Vbias(-24V)



In these runs, the PMTs were off!!

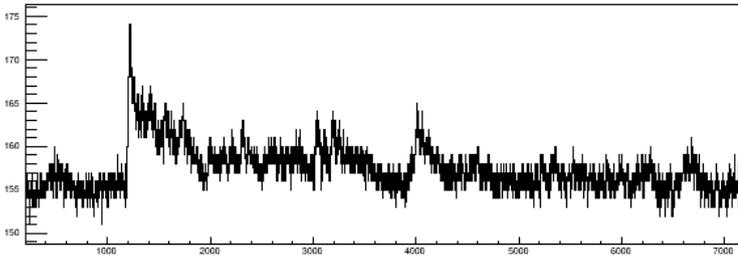
Hamamatsu PMT (overshoot → bipolar shape) induces noise on the SensL which worsen the Leading Edge of the

Ham PMT off Run 5604

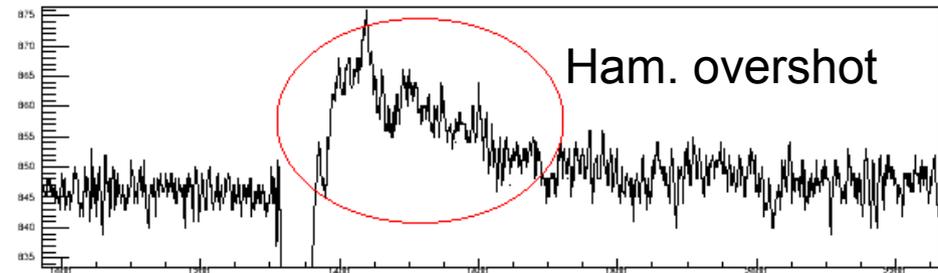


← Ham PMT Off (& ETL PMT Off)

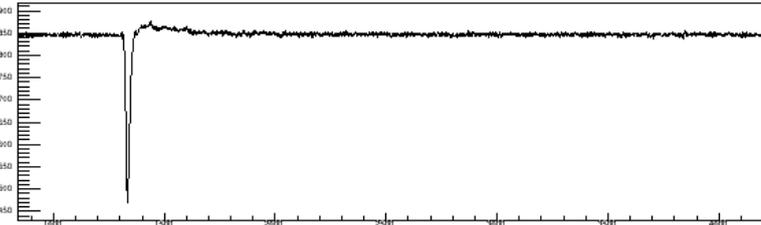
SensL SiPM + PA Run 5604



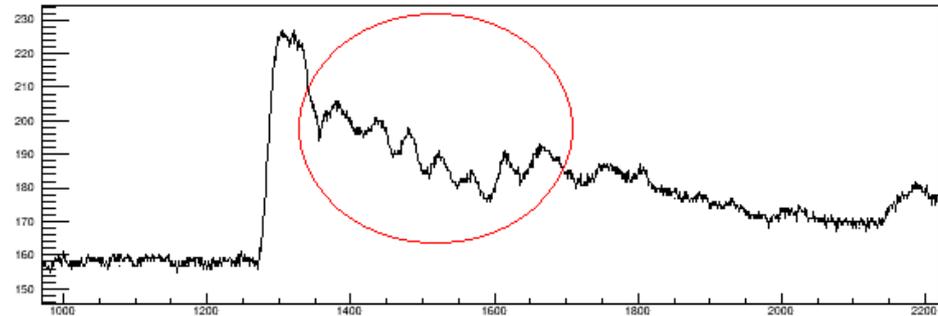
Ham PMT Run 5891



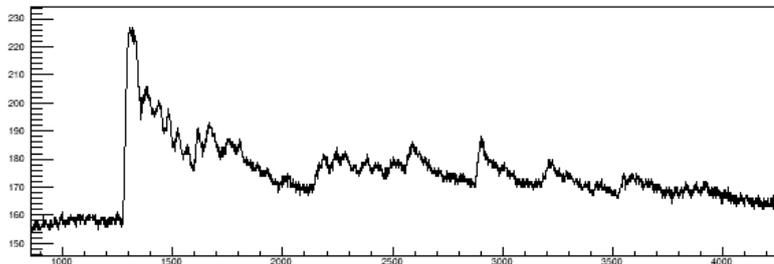
Ham PMT Run 5891



SensL SiPM + PA Run 5891



SensL SiPM + PA Run 5891



← Ham PMT On (& ETL PMT Off/On) ↑

28th May tests:

– New grounding (all optical devices grounded to cryostat) :

- Fixed part of SensL LF baseline noise
- Overall baseline noise attenuated

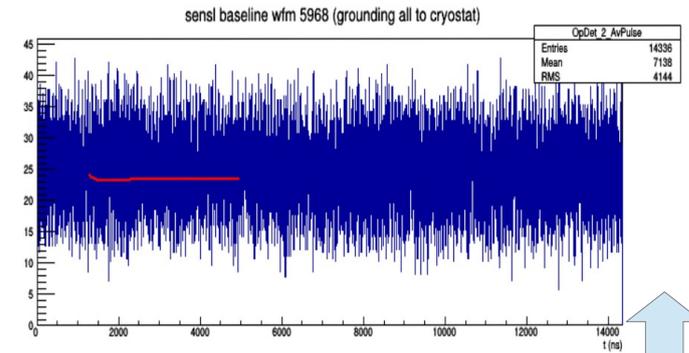
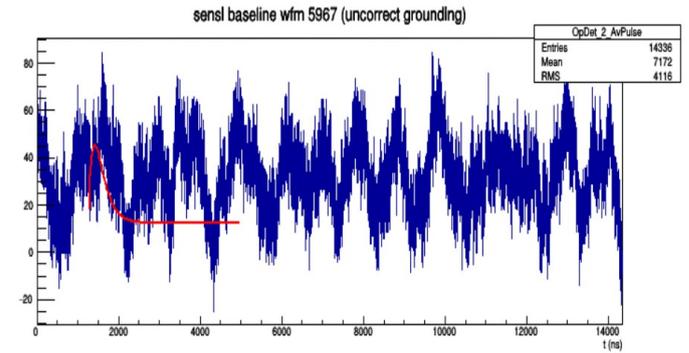
– Power SensL Sipm Vbias = -26 V (higher gain)

– Changed opamp 656 power supply

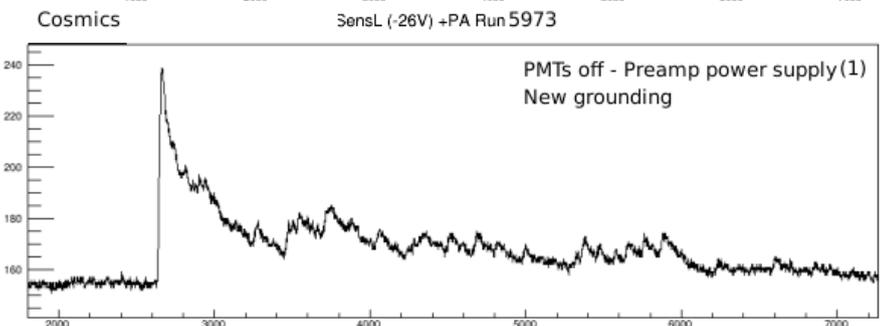
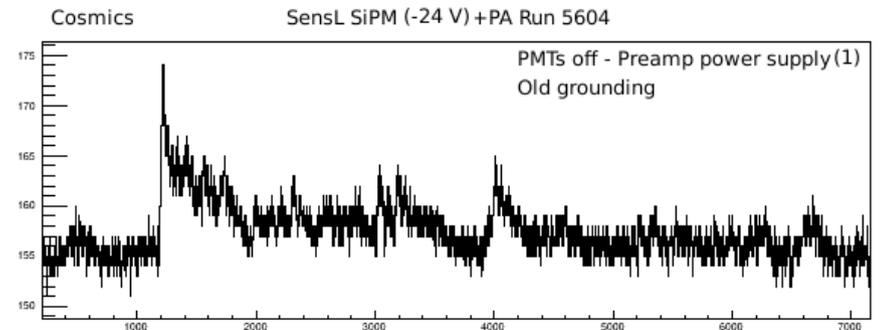
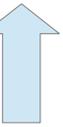
Cosmic signals on the SensL with the two grounding configurations



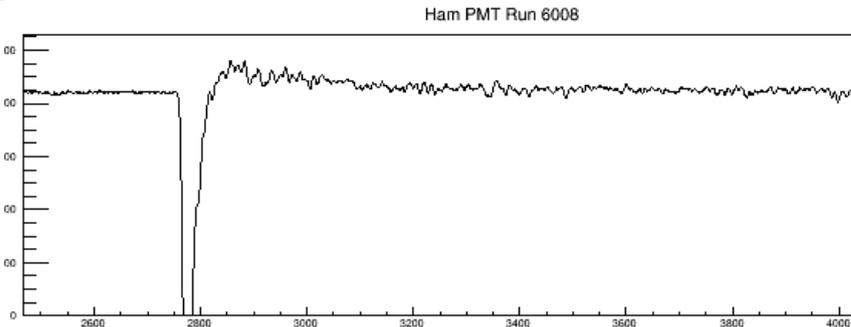
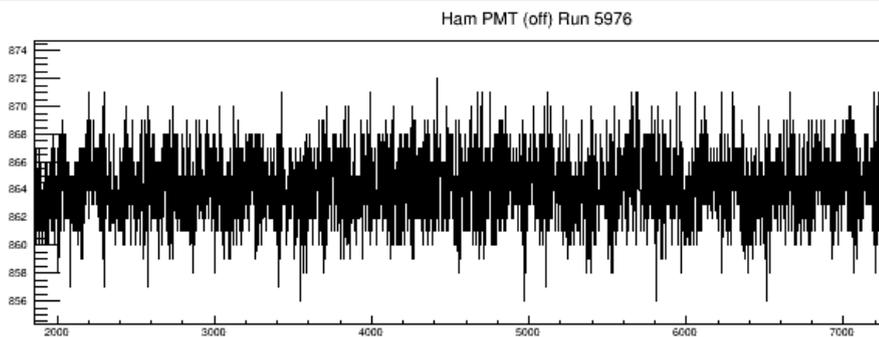
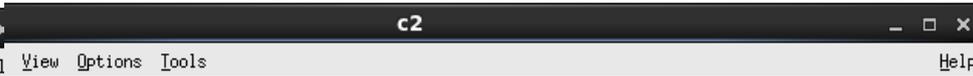
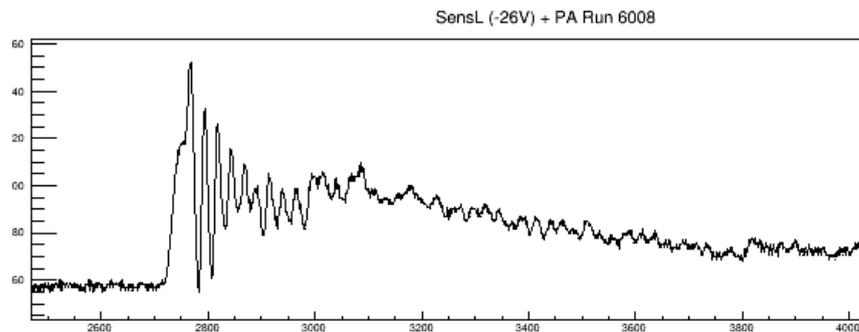
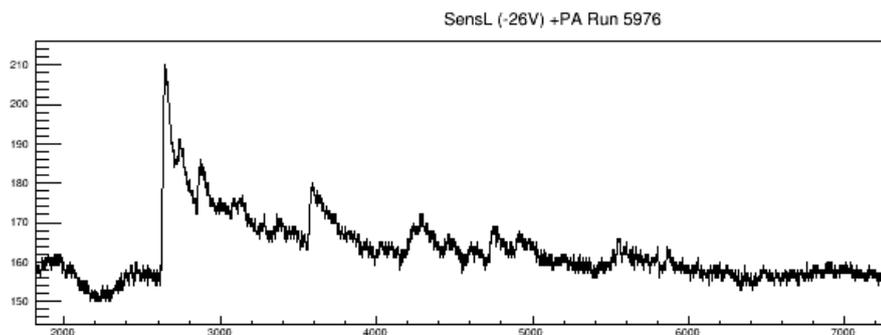
In these tests PMTs were OFF!!



Baseline noise (Pulser runs)



After 28th May tests – PMTs powered on:
the worsening of SensL signal due to Hamamatsu PMT is still
present, when it is on



Ham PMT Off (& ETL PMT Off)

Ham PMT On (& ETL PMT Off/On)

**How to deal with Hamamatsu PMT noise induction
on SiPM and TPC wires?**