Readiness of FE and related analog electronics (TG3)

C. Cattadori

Status of Ge detector analog electronics

- ✓ HV PS: 4ch N1471 (I_{mon}= 500pA) CAEN module (USB readout of Status, settings etc.) installed in devoted crate (Wiener mod. UEN01HC CANBUS interconnectable) in electronic cabinet. Spares available.
- ✓ 2 HV (RC, π configuration) filters modified with 160 MΩ in series tested in MiB in run with CC2 circuit; accepted and available. The remaining 8 HV units are at CAEN to be modified.
- ✓ LV PS: AGILENT E3631A Available & Ready (outside lab) Status and settings controlled by SC.
- ✓ Pulser : BNC type BN-5 tail pulser (programmable ramp of pulse height to continuously calibrate linearity), remotely controllable for FE&FADC calibration and check.
- ✓ HV, LV and signal cables from lock flange and e-cabinet (length 10 m). Cables available at LNGS.
- ✓ SMA connectors for signal delivered to Munich
- ✓ Fisher 102 connectors for LV in Munich
- ✓ HV Ar-sealed flange cables inside lock installed in Munich onto the lock
- ✓ 4 ch MCA and 1 spectroscopy amplifier available for analog spectroscopy measurements.
- ✓ Control of chiller cooling the e-cabinet to be done

Cryogenic FE and related HW

- ✓ FE circuits: available at LNGS 3 x 3 ch PZ0 circuits (tested).
- ✓ Prototype of PZ0 line-driver available (Tested in MiB)
- ✓ 8 PCB made out of Cuflon already produced actually at company for chip bonding and components mounting (components will be delivered by us, only screened components) (3 weeks + 1 week test)
- ✓ Cu box for FE mounting in LAr available
- ✓ CSA based on Commercial CMOS OPAMP very advanced (5 weeks from now to have 4 x 3ch low background working circuit)
- ✓ PZ1 circuit (improved PSRR, 50 Ω load etc..) newly produced, delivered in Milano Physic Dept. (A. Pullia, F. Zocca) and at present under test. Results not yet available.

Radioisotopes concentration in FE circuits

- ✓ FE circuits: available at LNGS 3 x 3 ch PZ0 circuits (tested). Result of individual radioactivity measurement (reference value for B = 10^{-3} c/keV kg y):

  Th < 500 μBq/PCB

  U < 3 mBq/PCB

	U-238/Ra-226 [mBq/PCB]	Th-232/Ra-228 [mBq/PCB]	Th-232/Th-228 [mBq/PCB]	K-40 [mBq/PCB]	
#1	0.70 +/- 0.15	< 0.28	< 0.40	5.4+/- 1.9	(GeCris)
#2	0.49 +/- 0.08	0.25 +/- 0.09	0.28 +/- 0.08	2.6 +/- 0.7	(GeMPI2)
#3	0.54 +/- 0.08	0.24 +/- 0.09	0.29 +/- 0.08	3.2 +/-0.8	(GeMPI2)

Pb-210:

#1	< 1.1 Bq/PCB	(GeCris)
#2	(5.9 +/- 2.7) Bq/PCB	(GeMPI2)
#3	< 5.3 Bq/PCB	(GeMPI2)

Pins for PCB to Habia Cable connection

U-238/Ra-226 [mBq/PCB]	Th-232/Ra-228 [mBq/PCB]	Th-232/Th-228 [mBq/PCB]	K-40 [mBq/PCB]
<0.076	< 0,120	0,060+/- 0.02	0.4 +/- 0.2 (GeCris)
