

Overview of Phase I detectors

Stefan Schoenert on behalf of
TG1

GERDA general meeting 12-14 Feb. 2007

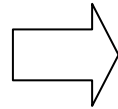
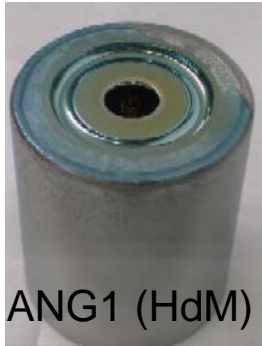
Recent TG1 activities

- Analysis of IGEX deadlayer
⇒ Andrey's talk
- Phase I prototype testing at LNGS
⇒ Marik's talk
- TG1/TG3 integration tests with IPA4
⇒ Carla's talk
- Processing of enriched diodes and non-enriched diodes
⇒ this talk
- Status of GERDA detector lab / test facility
⇒ this talk
- Light yield and pulse shape studies of LAr/Xe system
⇒ no presentation at this meeting

(Slide from October 06 LNGS SC meeting)

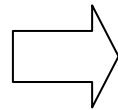
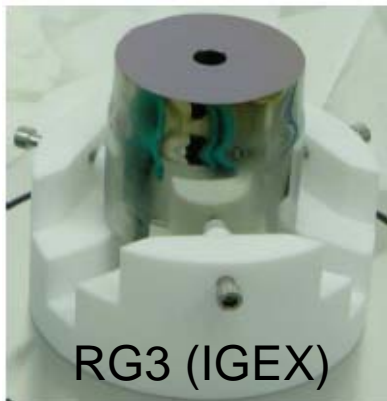
Phase I Detectors

Processing of enriched detectors at Canberra, Semiconductors, Olen (Be)



machining of
hole,
implantation of
inner contact,
passivation
layer

Aug. 21: LNGS to HADES
Aug. 26: Returned to LNGS
Expos. to cosmic rays: 99 h
I/V curve measured in liquid N₂



Aug. 21: LNGS to HADES
Sept 11/12: processed at
Canberra; stored underground
Expos. to cosmic rays: 42 h
(+ transport to LNGS)
I/V curve measured in liquid N₂

- Technology & Logistics mature to process enriched crystals with negligible built-up of cosmogenic ⁶⁸Ge, ⁶⁰Co and negligible mass loss
- Plan: process all IGEX & HDM crystals in batches together with Genius-TF crystals

Schedule update of Phase I detector reprocessing

- Aug 06 Processing of ANG1 (100 h above ground)
- Sep 06 Processing of RG3 (60 h above ground)
- Nov. 06 Delivery of ANG2-5 & RG1/2 to HADES
- Dec. 06 Delivery of 4 GTF crystals to HADES
- Dec. 06 Machining of 2 enriched and 2 non-enriched crystals
- Feb 07 Delivery of 2 GTF crystals, machining and Li-drifting of all enriched and non-enriched crystals (Herbert Strecker this week at Olen)
- Mar/Apr Implantation, passivation, of all crystals, I/V (time slot not yet fixed); transport to LNGS and storage at -30 C at LNGS
- Spring: All enriched (~18 kg) and non-enriched crystals (~14kg) processed and return to LNGS; ready for testing of I/V curve

Exposure of all crystals expected < 100 h because of underground storage at HADES ⇒ well below specifications

Work would not have been possible without Mikael Hult and colleagues from GEEL!!

Schedule update of GERDA-LArGe and phase I detector testing

- Nov 06 Copper sheets produced
- Dec 06 Selection of <1 mBq/kg steel (first sample: ~ 5 mBq/kg)
- Jan 07 Approval of final design and start of production
- Feb Vessel heads, steel neck rolled & milled, cryogenic connections
- April Tank construction completed (one month delay w/r to Oct schedule because of steel selection)
- Mai Cryotank test at MPIK; preparation of cryogenic system for GERDA-DL
- Jun/July Cryostat, shield and lock mounting at LNGS
- Autumn Commissioning and subsequent start of background measurements with natural / enriched detectors (program and sequence to be defined)

