



-Dark Matter Search -

EDELWEISS Collaboration

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*1kg stage of EDELWEISS-I:
3*320 g Ge.*



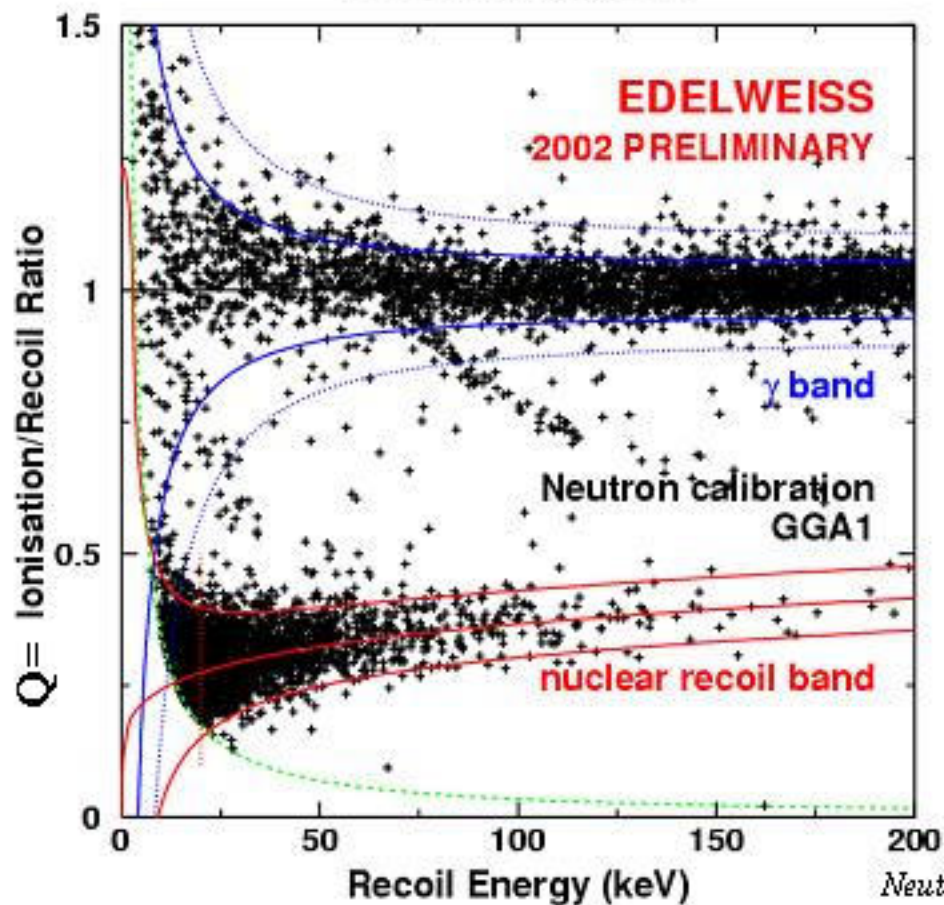
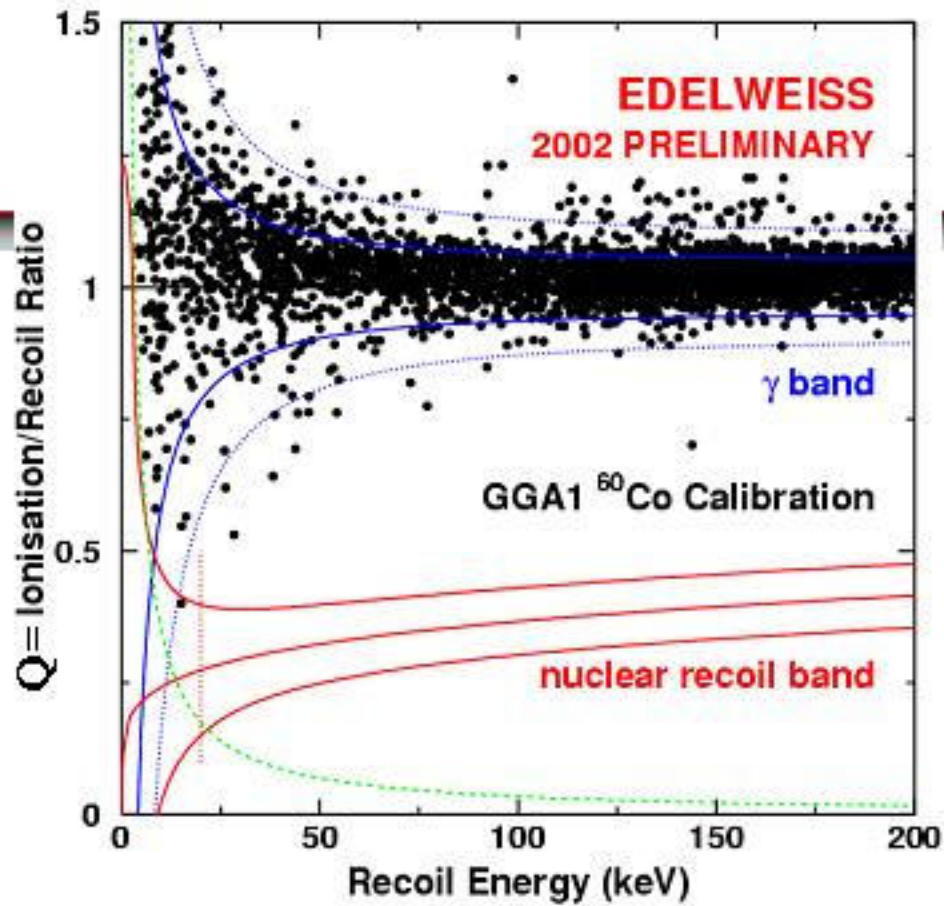
- *GGA1: heat and ionisation Ge detector*
- *aluminium electrodes (center + guard ring) + Ge amorphous layer*
- *NTD sensor on guard ring electrode*

320g largest mass bolometer with double-detection capability

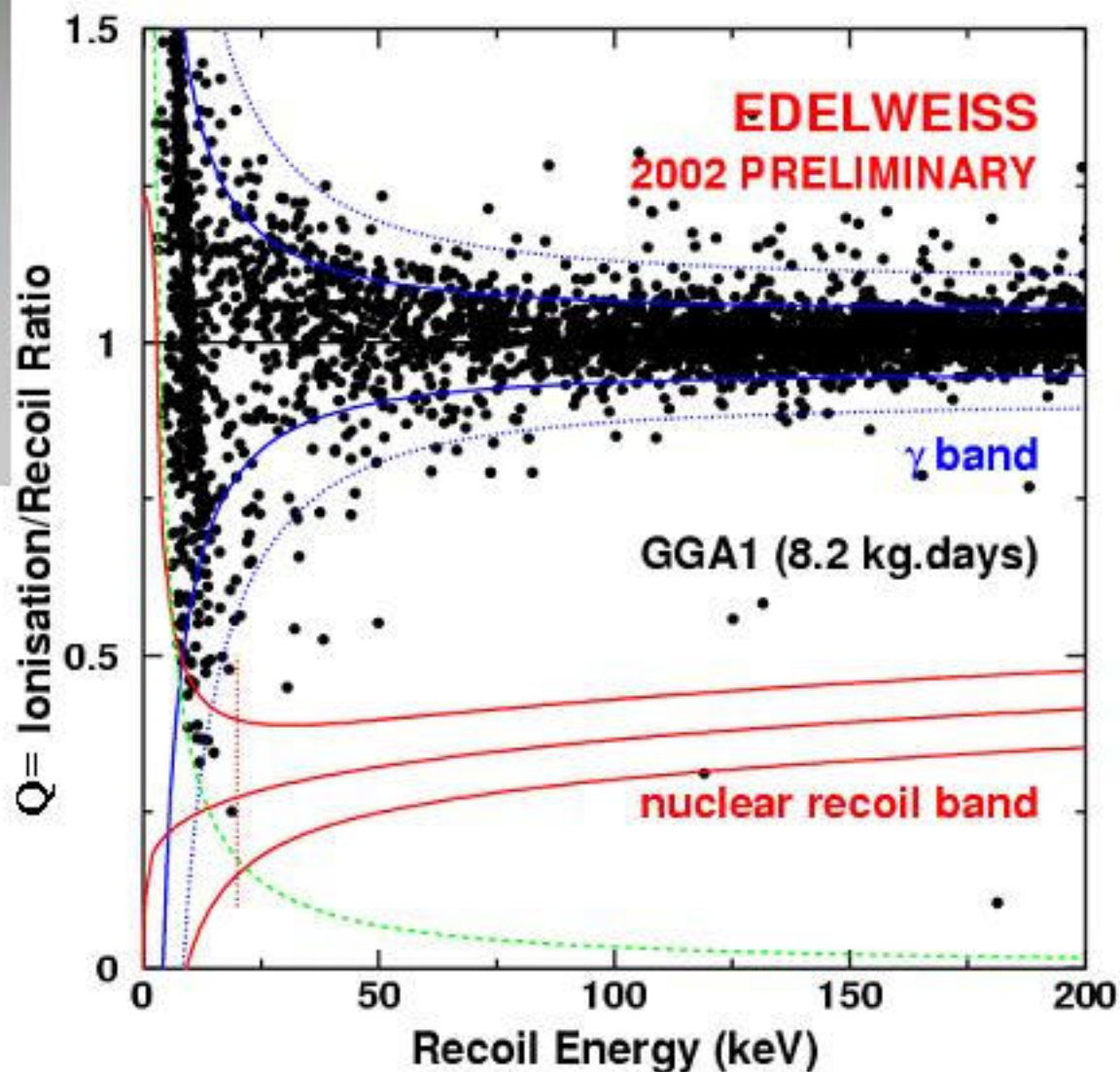
- *Low radioactivity cryostat*
- *Shield: 30 cm paraffin, 20 cm Pb, 10 cm Cu*
- *Installed in **Fréjus Lab** 4800 mwe*
- *Low neutron background $1.6 \cdot 10^6$ n/cm²/s*

- *Resolutions @ 10 keV (resp 122) keV:*
 - *ionisation : 1.3 keV (2.2 keV)*
 - *heat : 1.0 keV (3.0 keV)*

GGA1 γ and neutron calibrations



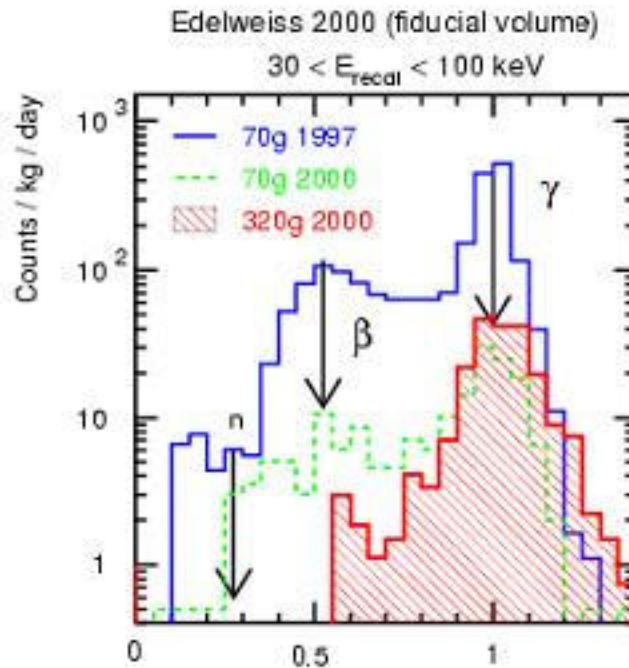
EDELWEISS-I : 2002 data from GGA1 detector



- *3 consecutive month data acquisition with no warm up*
- *1 event at 120 keV in (?) nuclear recoil zone (90%) in fiducial central volume (54% of 320 g mass) 8.2 kg.d*

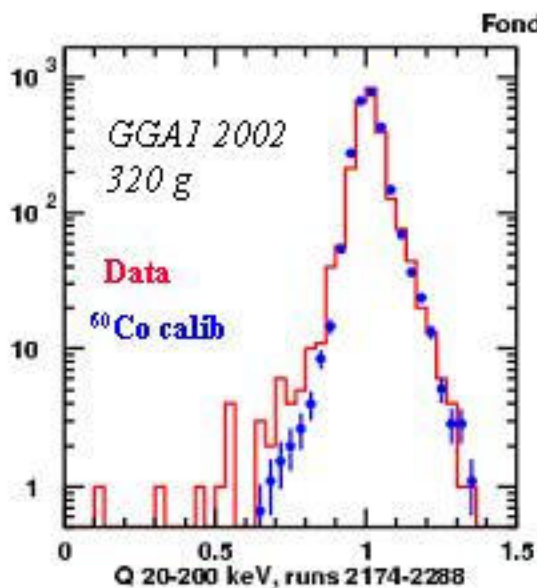
EDELWEISS-I

1997-2002 : improvement of detector qualities : Q distributions

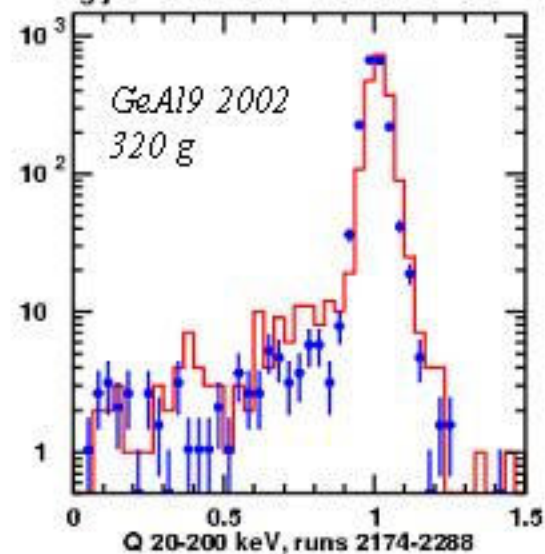


1997
 13 evts/kg.d in
 nucl recoil zone

2002/05/24 19.16

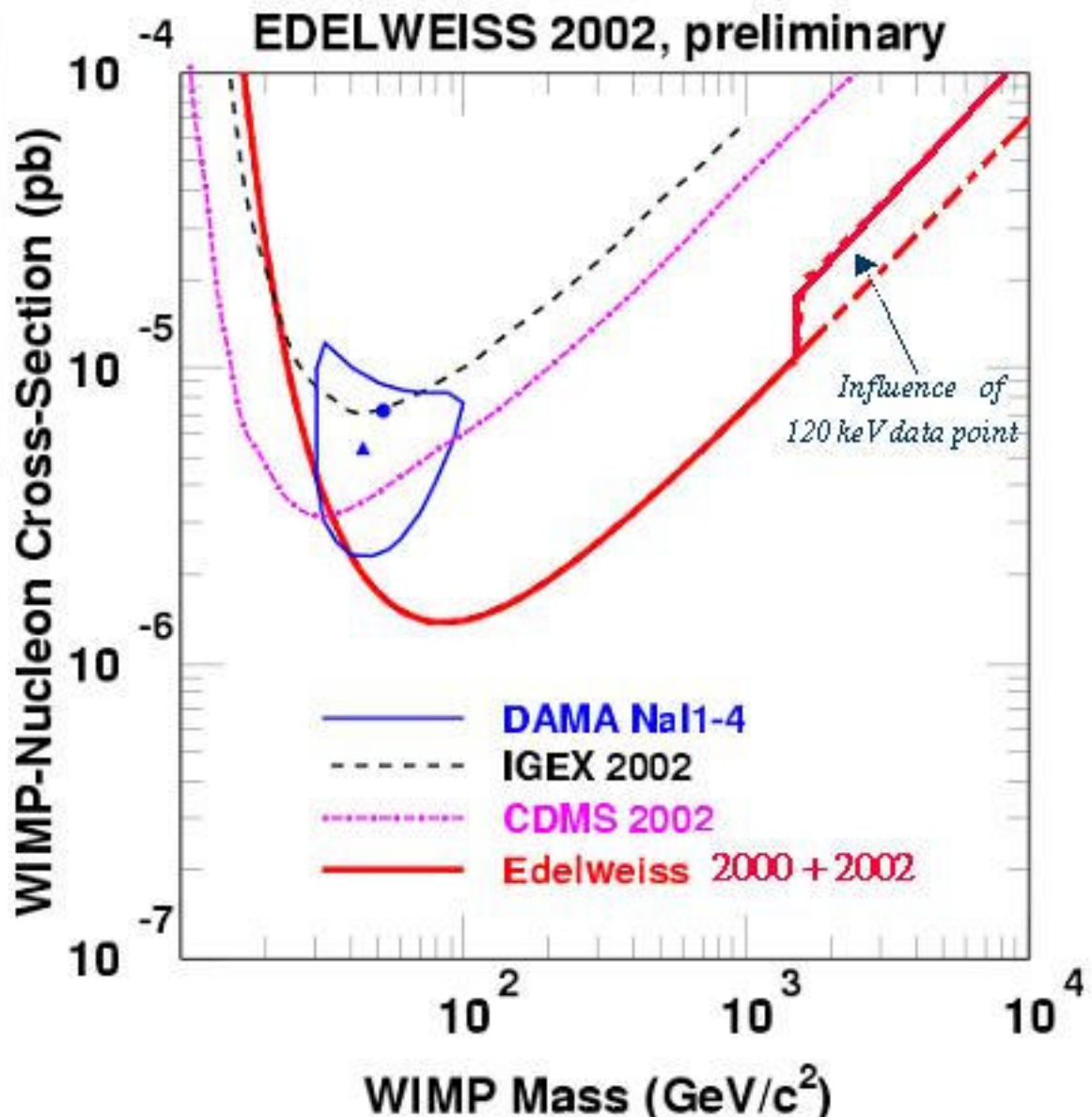


2002
 < 0.3 evts/kg.d in
 nucl recoil zone

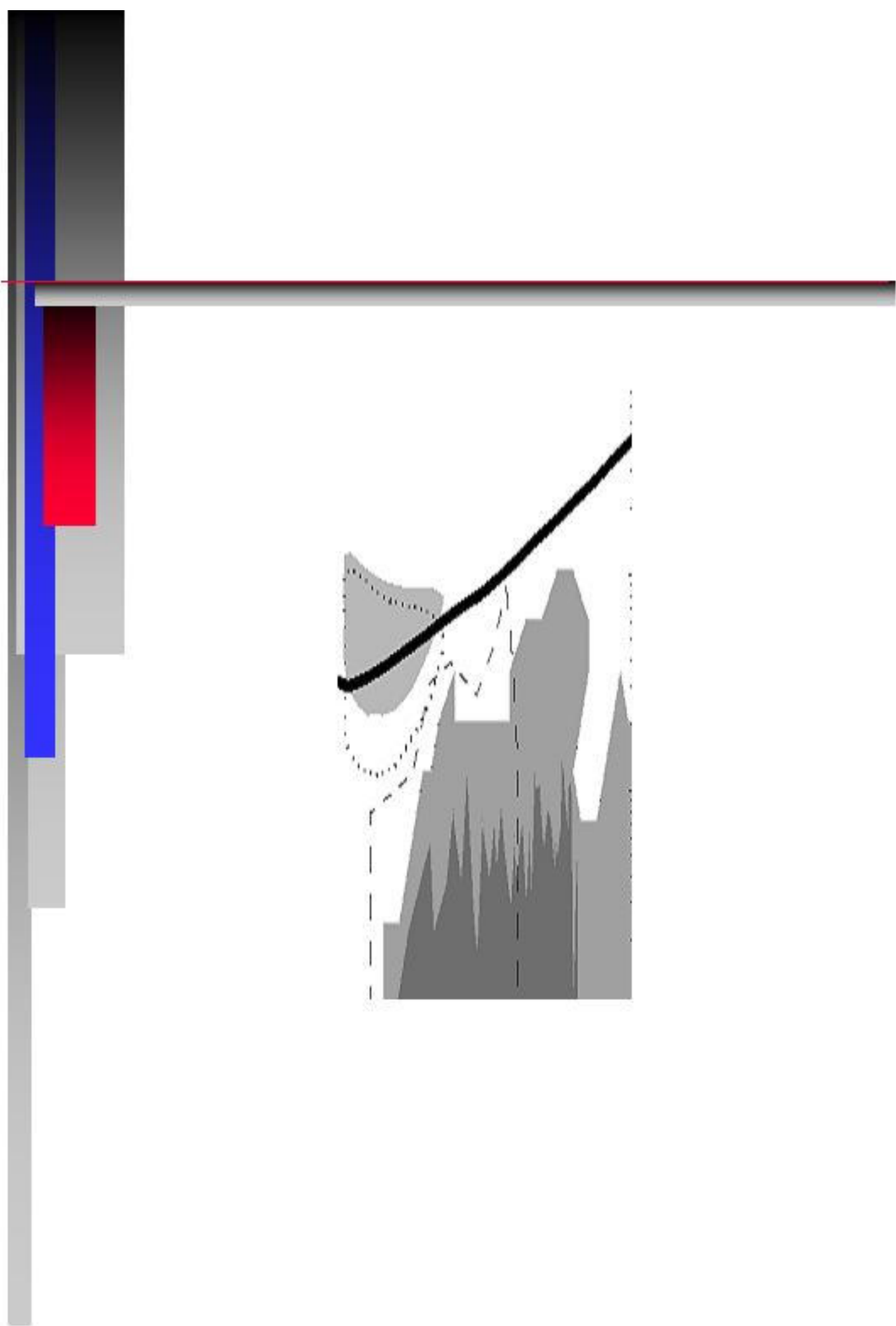


2002
 2.2 evts/kg.d in
 nucl recoil zone Neutrino 2002

EDELWEISS-I 05/2002
Present sensitivity for
spin independent WIMPs (bis)



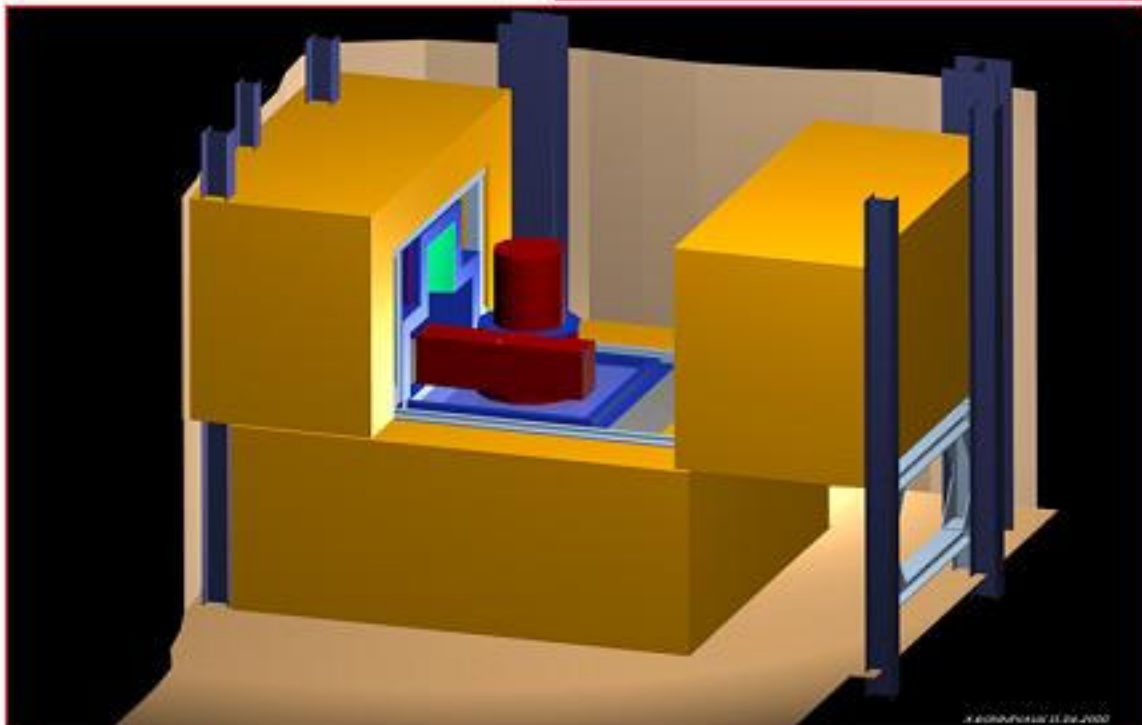
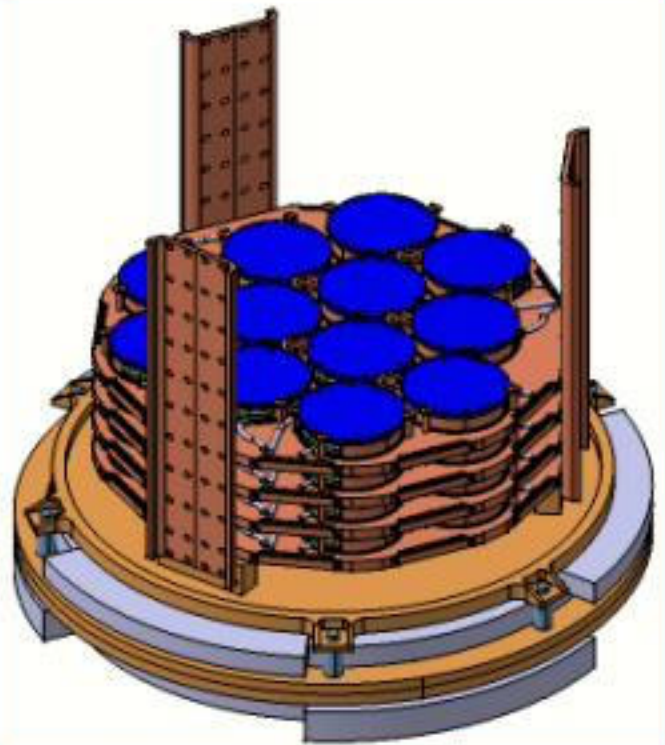
- *Standard halo assumed, mean velocity of 220 km/s*
- *WIMP signal acceptance = 95 %*
- *Exposures (fiducial-corrected for recoil and WIMP acceptances) : 2000 data (5.0 kg.d- 4.3 kg.d) cumulated with 2002 data (8.2 kg.d-7.0 kg.d)*



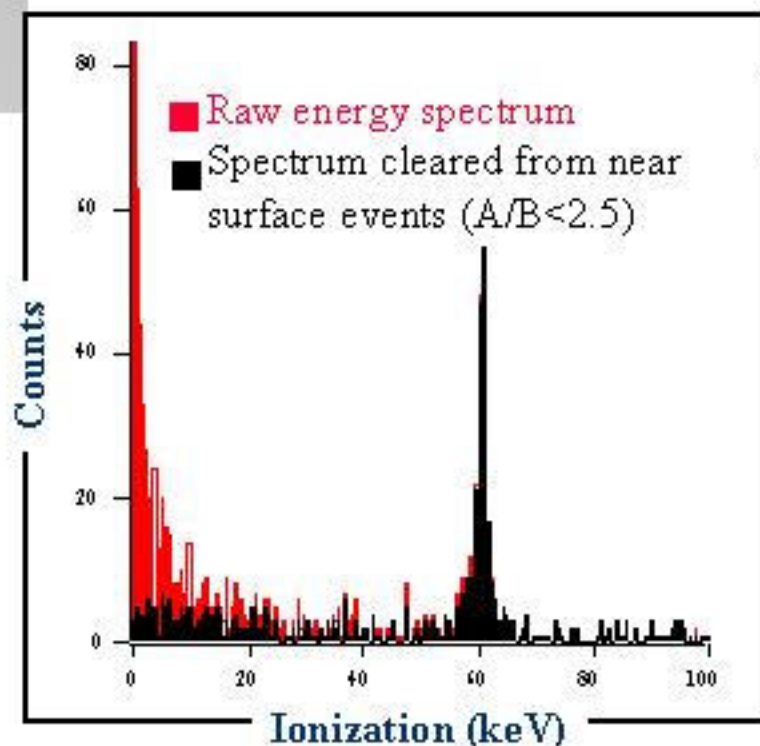
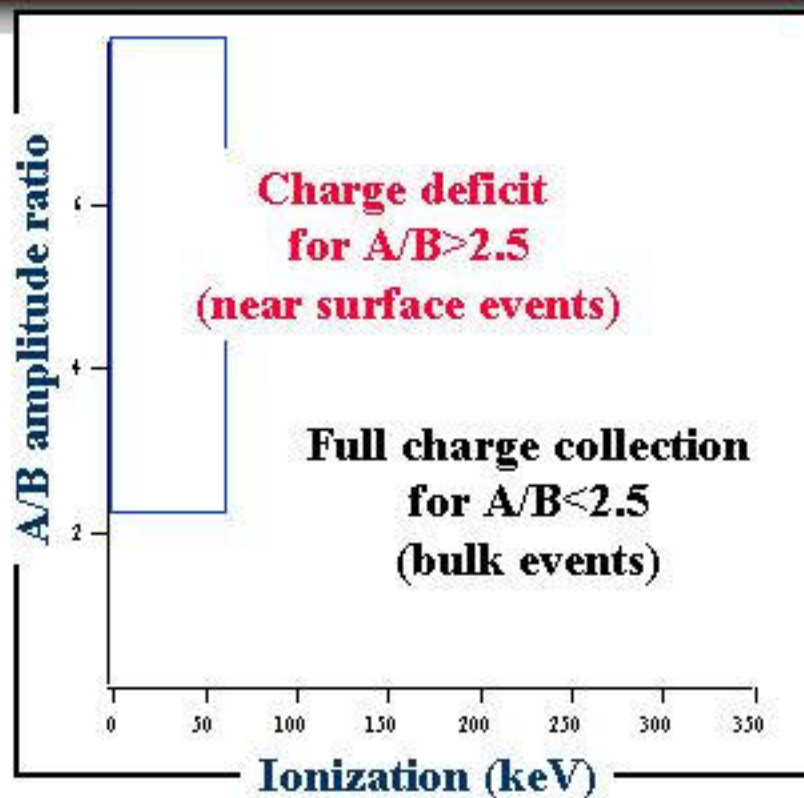
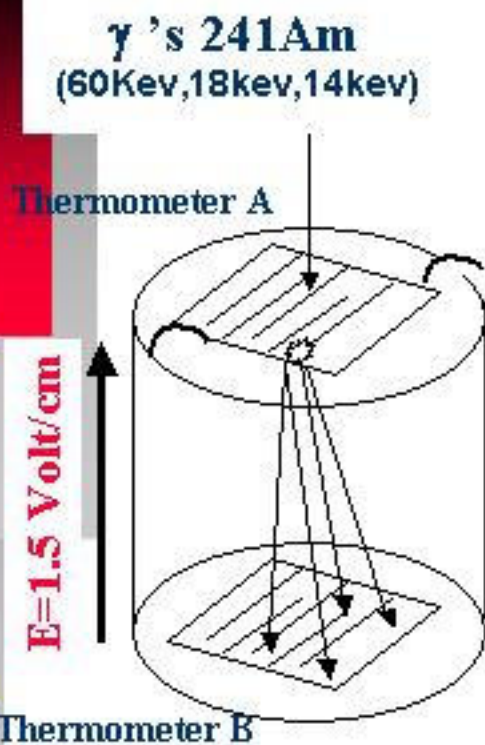
EDELWEISS-II detector setup

*(Phase 21*320g detectors approved, 2004)*

- *100 liter cryostat for up to 120 detectors : 36 kg Ge*
- *Development of NbSi thin layers to eliminate surface events*
- *Improve sensitivity by factor 100*



Surface event rejection
Ballistic phonon detection with Nb Si thin layers
Ge bolometer (35g) (heat & ionization)



• Allows to reject surface events down to the energy threshold