EDELWEISS III DAQ

EDELWEISS MAIN TARGET

The goal of the EDELWEISS-III experiment is to test this WIMP hypothesis by attempting to observe directly some interactions between WIMPs from our own galaxy and an appropriate detector.

EDELWEISS I to DELWEISS III

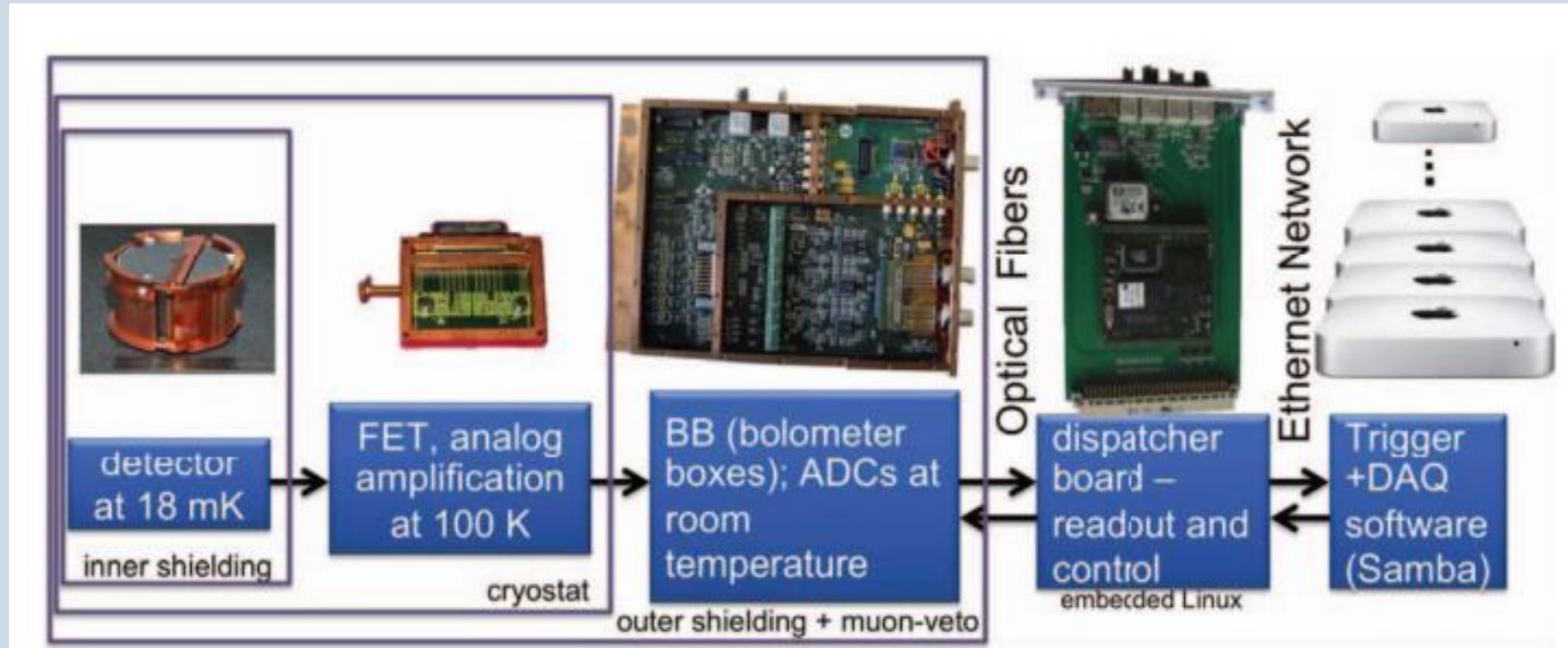EDELWEISS I: three 320 gr Ge detectors(total mass:0.96kg)

EDLEWEISS II: ten 400 gr Ge detectors(total mass:4kg)
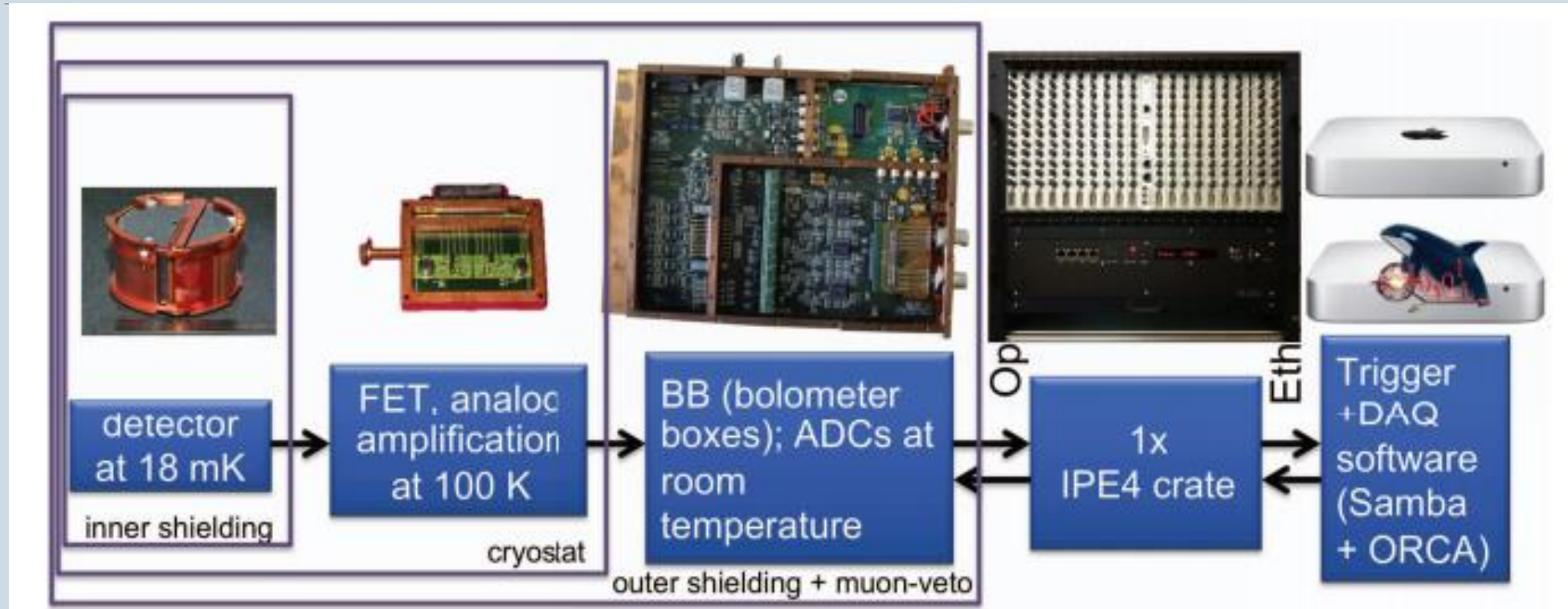
EDLEWEISS III:

ideal: forty 800 gr detectors(total mass:32kg)

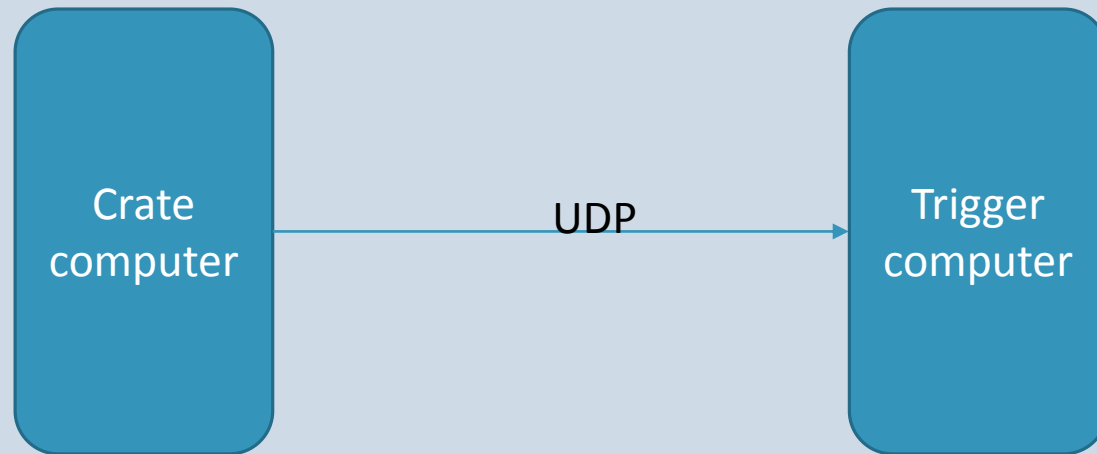now: 24 detectors(total mass:~19kg)

DETAIL STRUCTURES—EDLEWEISS II

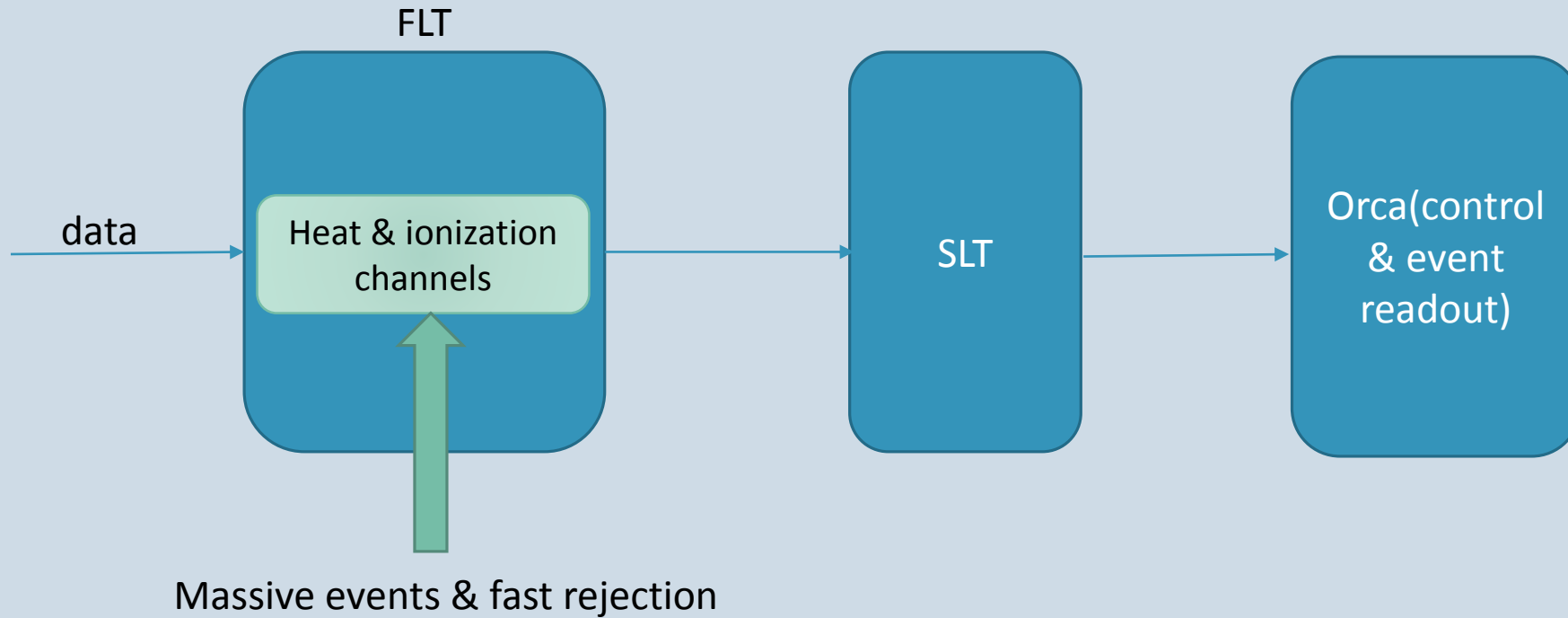# DETAIL STRUCTURES—EDLEWEISS III

detector at 18 mK

inner shielding

FET, analog amplification at 100 K

cryostat

BB (bolometer boxes); ADCs at room temperature

outer shielding + muon-veto

Op

1x IPE4 crate

Eth

Trigger +DAQ software (Samba + ORCA)

DATA FLOW—FULL UP-STREAM MODE

Crate computer

UDP →

Trigger computer

Support traditional commands and data protocal

DATA FLOW—In-crate FPGA TRIGGER

FLT

data →

Heat & ionization channels

← Massive events & fast rejection

SLT →

Orca(control & event readout)

DATA FLOW—TIME RESOLVED IONIZATION CHANNELS

Ionization channel

40Mhz

Ionization channel

40Mhz

Internal memory

FPGA trigger
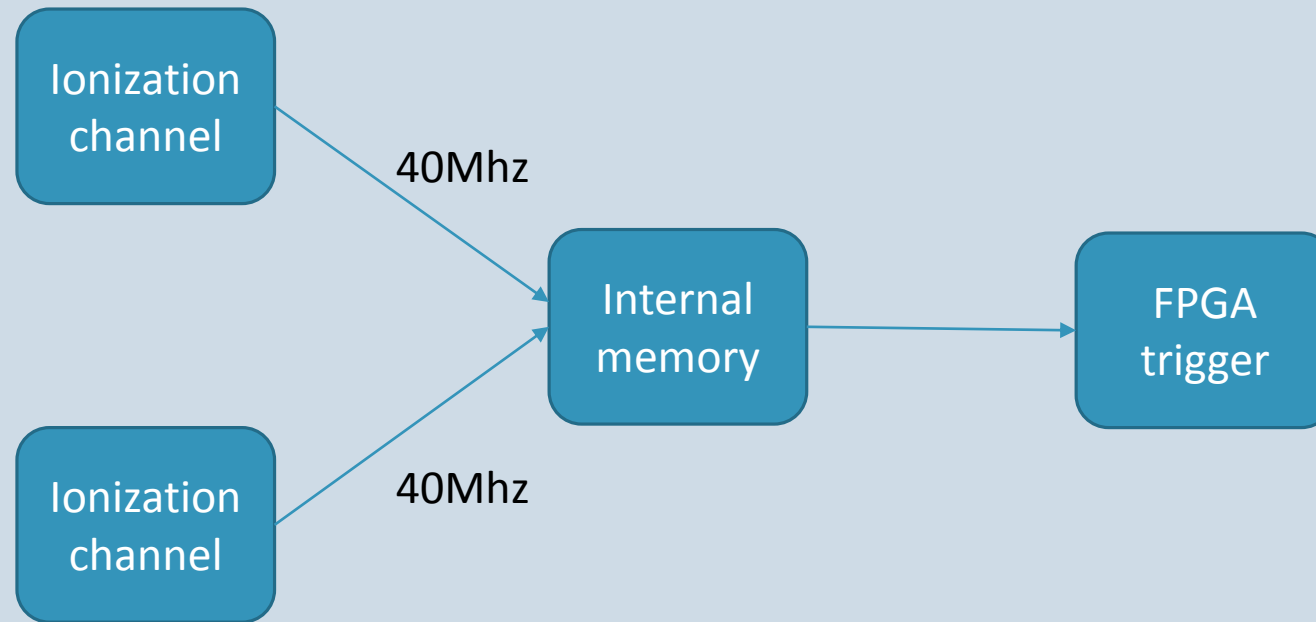
DATA FLOW—GPU TRIGGER
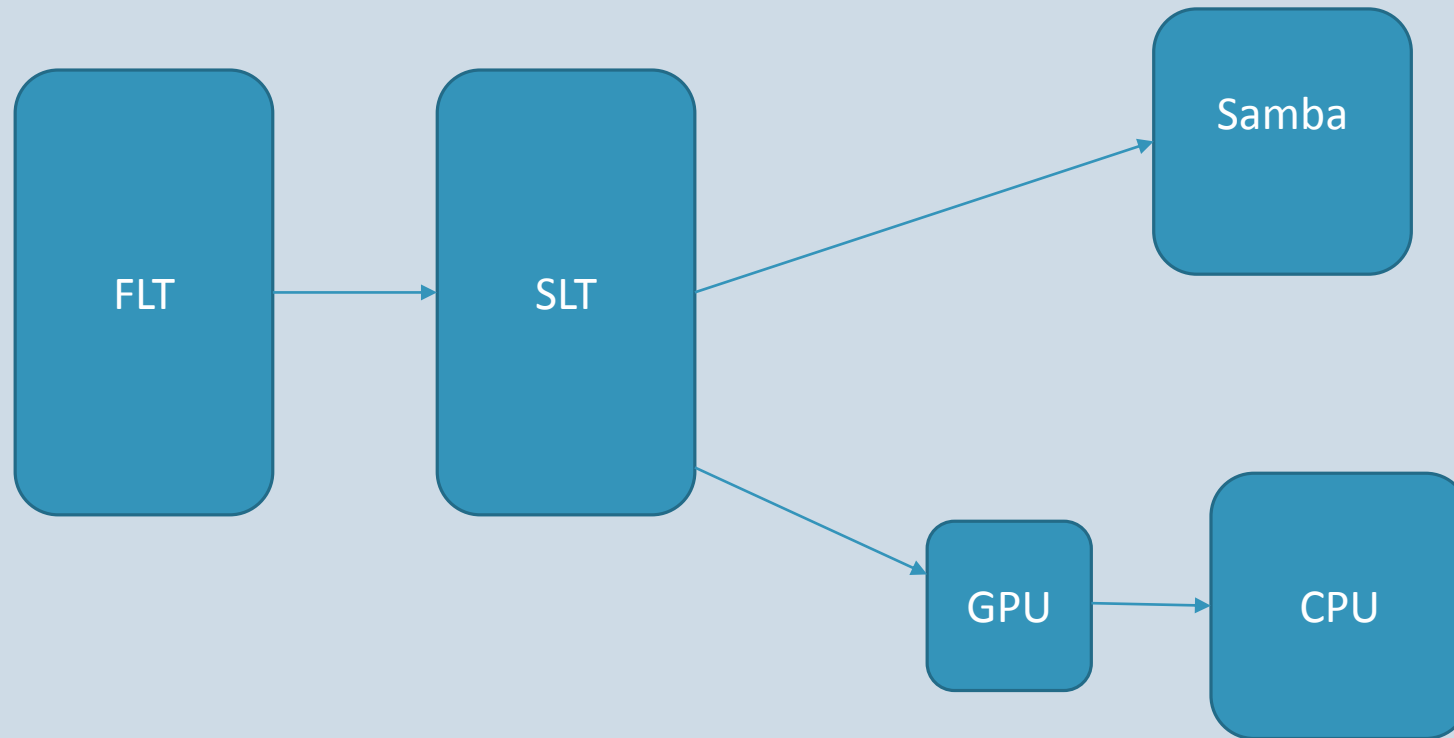
DATA FLOW—UNUSED CHANNEL REMOVAL

By rearranging the data sets, unused channels could be removed.

DATA FLOW—RELIABILITY

- Two years, no break in exposure time on system crashes

CONCLUSION(ADVANTAGES) & MY IDEA

The last part of the paper briefly includes the advantages of the new DAQ system.

Personal idea.

THANK YOU!