Setup idea for July Test Beam

Crystals

- EPIC: PWO, BSO (5cm)
- SICCAS: PWO, BGO, BSO (5, 15 cm)
- HILGER: BGO (5, 15 cm)

all with cross-section: 12x12 mm2

Filters

- long pass:
  - OG-550
  - RG-610
  - RG-665
  - RG-715
- short pass:
  - UG1
  - UG11
  - BG3

d = 25 mm, t = 3mm all by Schott

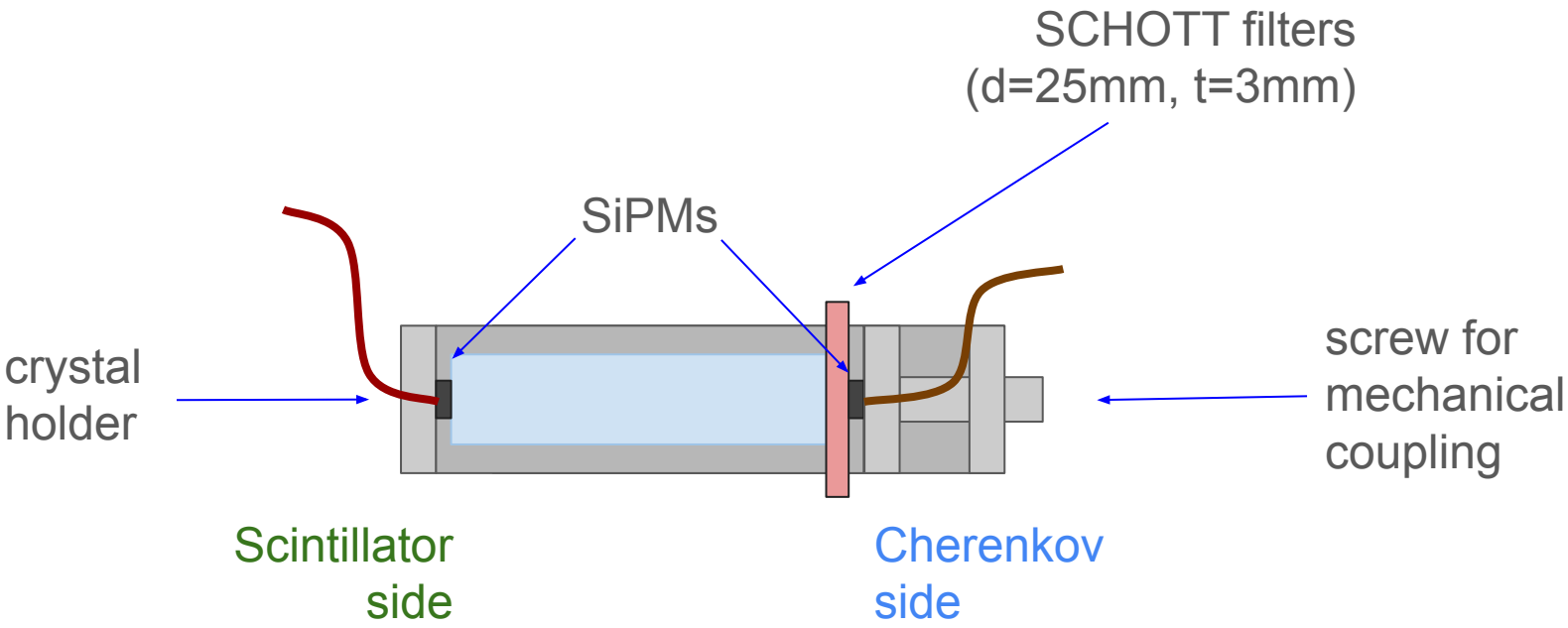
SiPM

Hamamatsu:

- 13360-3050 (50 mum, 3x3 mm2) mounted on a PCB with connector;

Broadcom UV:

- AFBR-S4N33C013 (30 mum, 3x3 mm2);
- AFBRS4N66C013 (30 mum, 6x6 mm2)



have to understand which
SiPM for the BGO/BSO

Hamamatsu 13360-3050
(50 mum, 3x3 mm2)

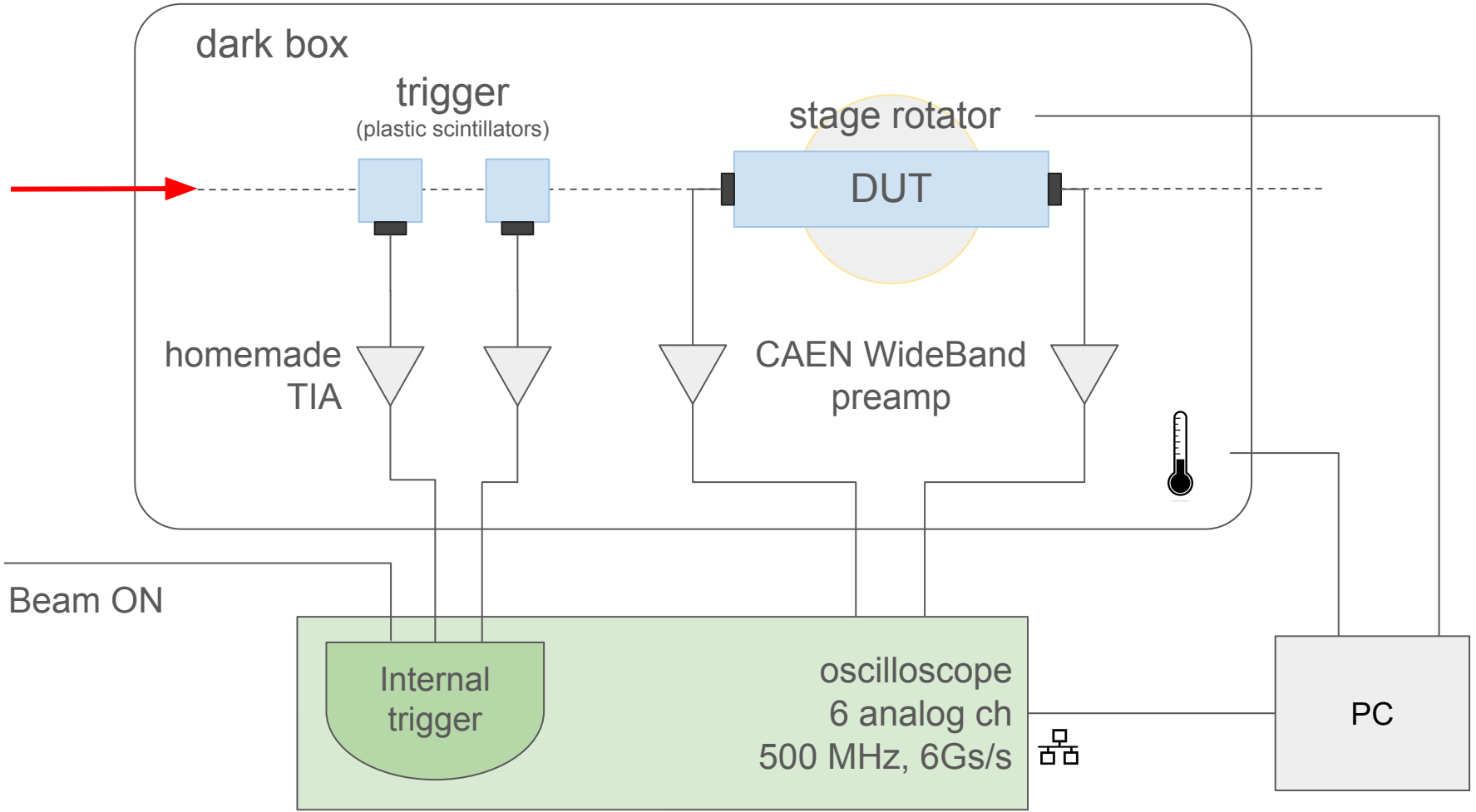
plans

configurations to test:

- PWO with long pass filters (cherenkov side)
- BGO/BSO with long/short pass filters (cherenkov side)
- several beam impact angles;

Have to decide a reasonable number of configurations:

- which producer/size crystals
- which filters


dark box
trigger
(plastic scintillators)
stage rotator
DUT
homemade
TIA
CAEN WideBand
preamp
Beam ON
Internal
trigger
oscilloscope
6 analog ch
500 MHz, 6Gs/s
PC

(DAQ) setup detailed description

- 2x CAEN Wide band (1.5 GHz) pream (A1423B) for Crystal SiPM;
- 2x homemade TIA for trigger sctillator SiPM;
- Power supply for TIA (+/- 5V)
- Power supply for CAEN preamp: 12V
- Power supply for SiPM: CAEN NDT1419, 4ch +/- 500 V, with remote control;
- Oscilloscope Tectronik MSO46B, 6ch, 500 MHz, 6.25 Gs/s:
  - Crystal SiPM signal acquisition;
  - Beam on signal acquisition;
  - trigger scintillators acquisition and trigger logic;
- CAEN logic unit (discriminator, AND/OR, scaler) with remote control as backup to the on-oscilloscope trigger;
- Led driver for SiPM characterization;

Status of the parts

- TIA: available, tested
- CAEN preamps: available, tested
- Oscilloscope: available
  - onboard remote access not working, requested assistance
  - basic readout software being implemented, ~200Hz readout observed
  - fallback option with older oscilloscope (slow but known working) or CAEN DT5751 (available but never used)
- DUT SiPMs + crystal + filter: available, in use with cosmics
  - filter optical function measured
- Plastic triggers: scintillator & SiPMs available
  - final mechanics to be designed
- Temperature/Humidity: Arduino+sensors available
  - firmware and readout to be developed
- CAEN logic unit (N1081B): basic checks done
  - N844 low threshold discriminator also available
- DUT mechanics: to be reviewed with anchor points
- Movable stage: preliminary investigation
  - with local services in Naples, buy a commercial part?
- Dark Box: preliminary investigation
  - with local services in Naples