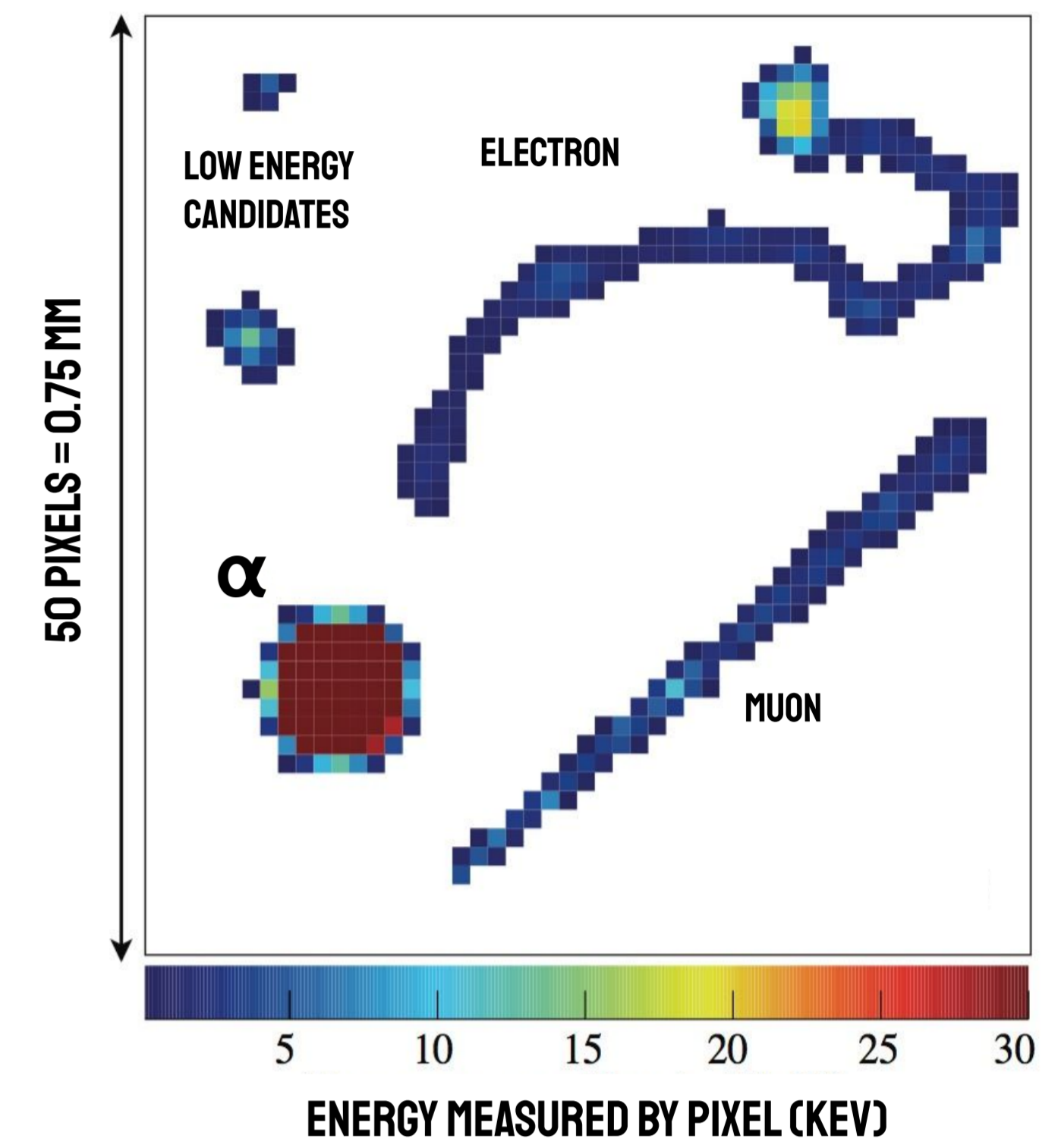
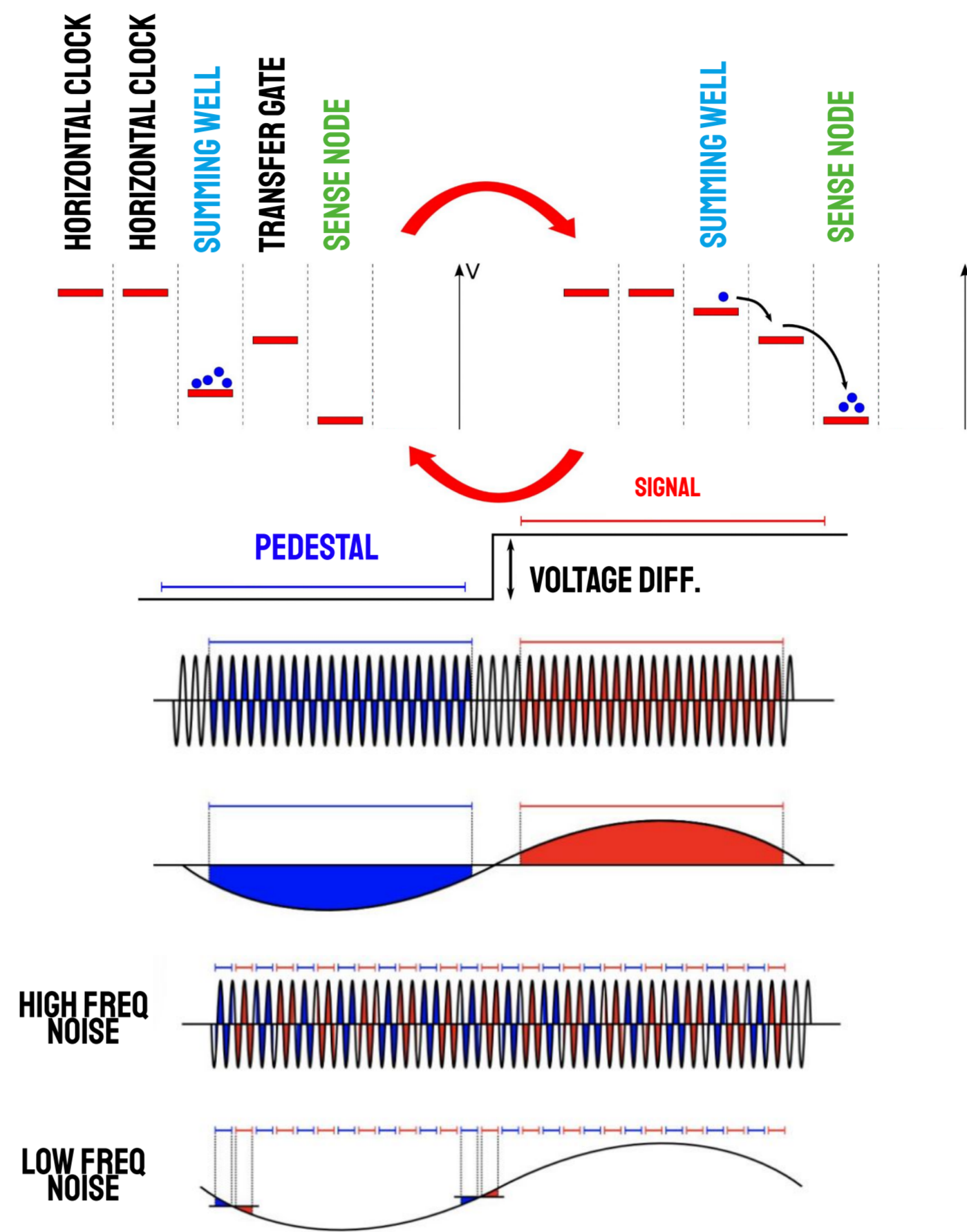
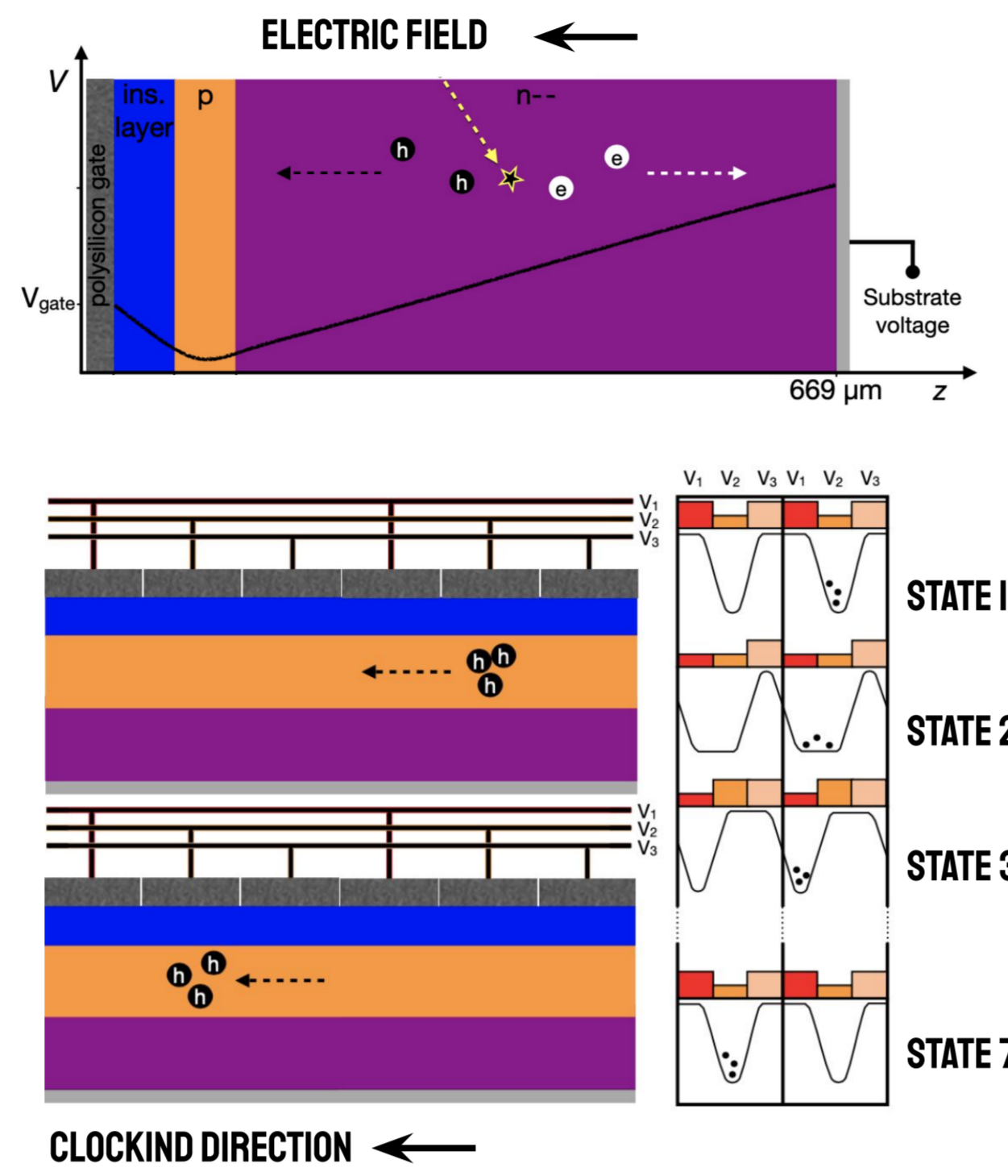
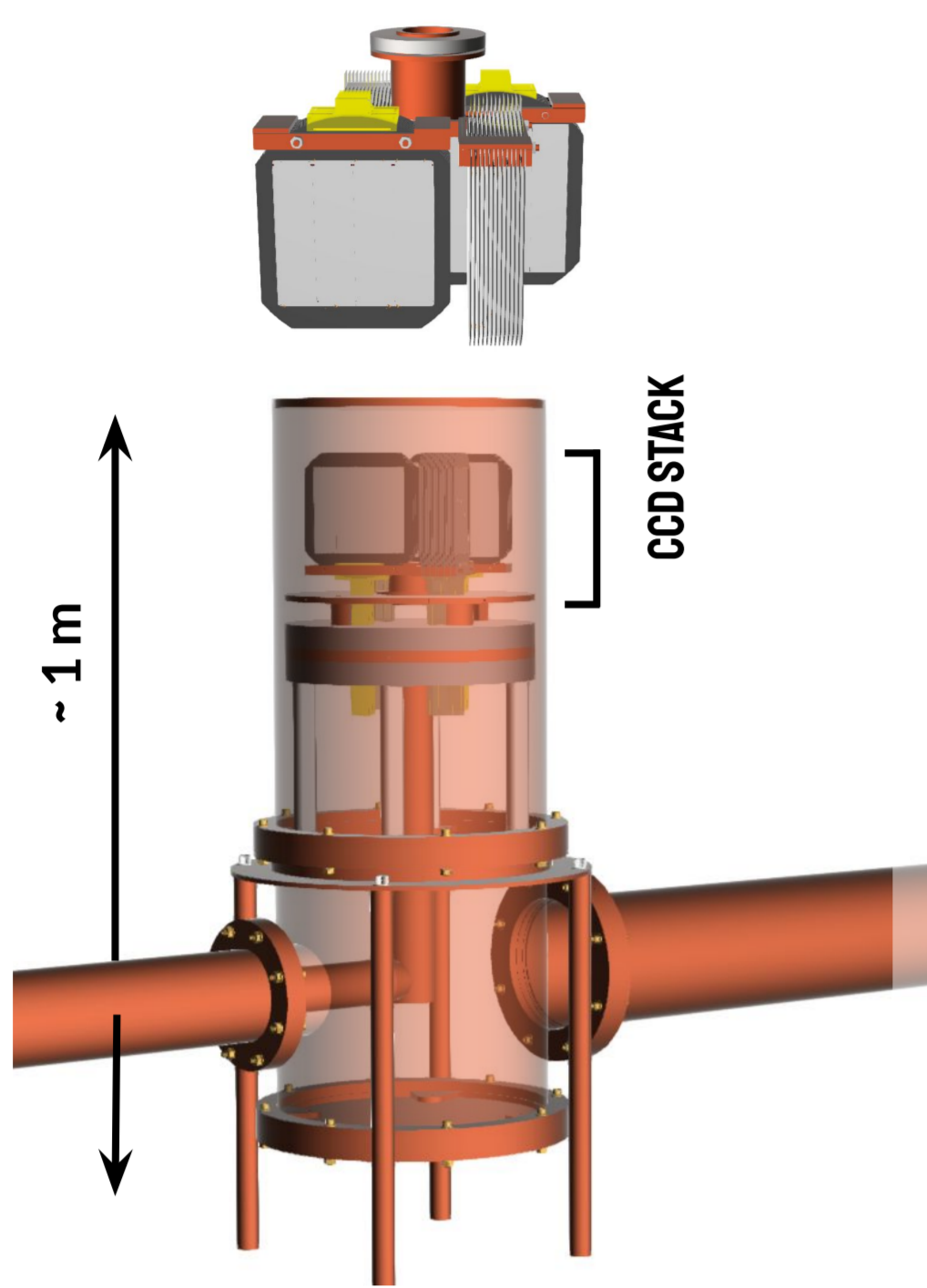


DARK MATTER IN CCDs AT MODANE



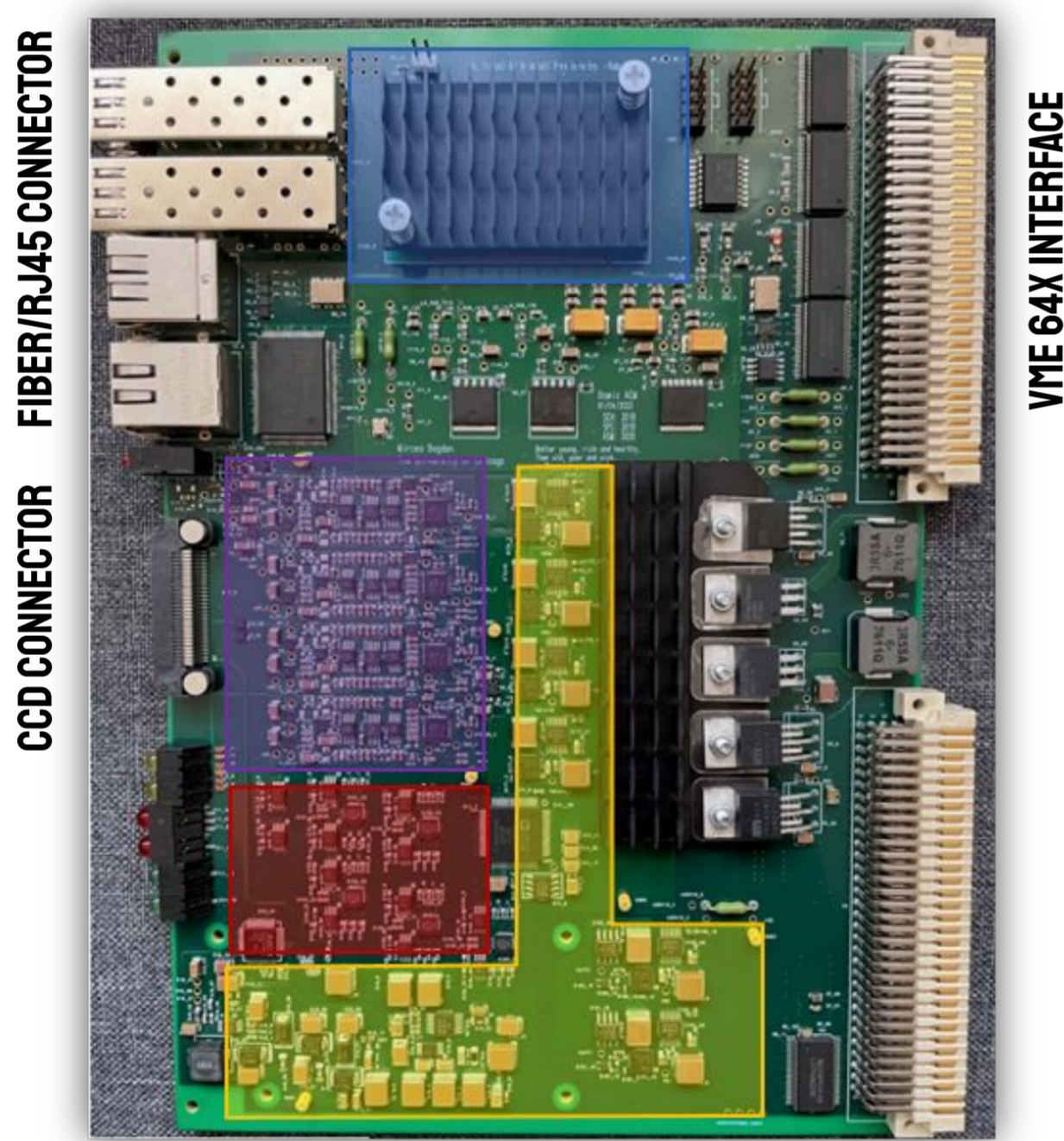
DAMIC-M is a direct detection experiment which will employ skipper Charge-Coupled Devices (CCDs) to search for low-mass dark matter particles.

DETECTOR AND ELECTRONICS



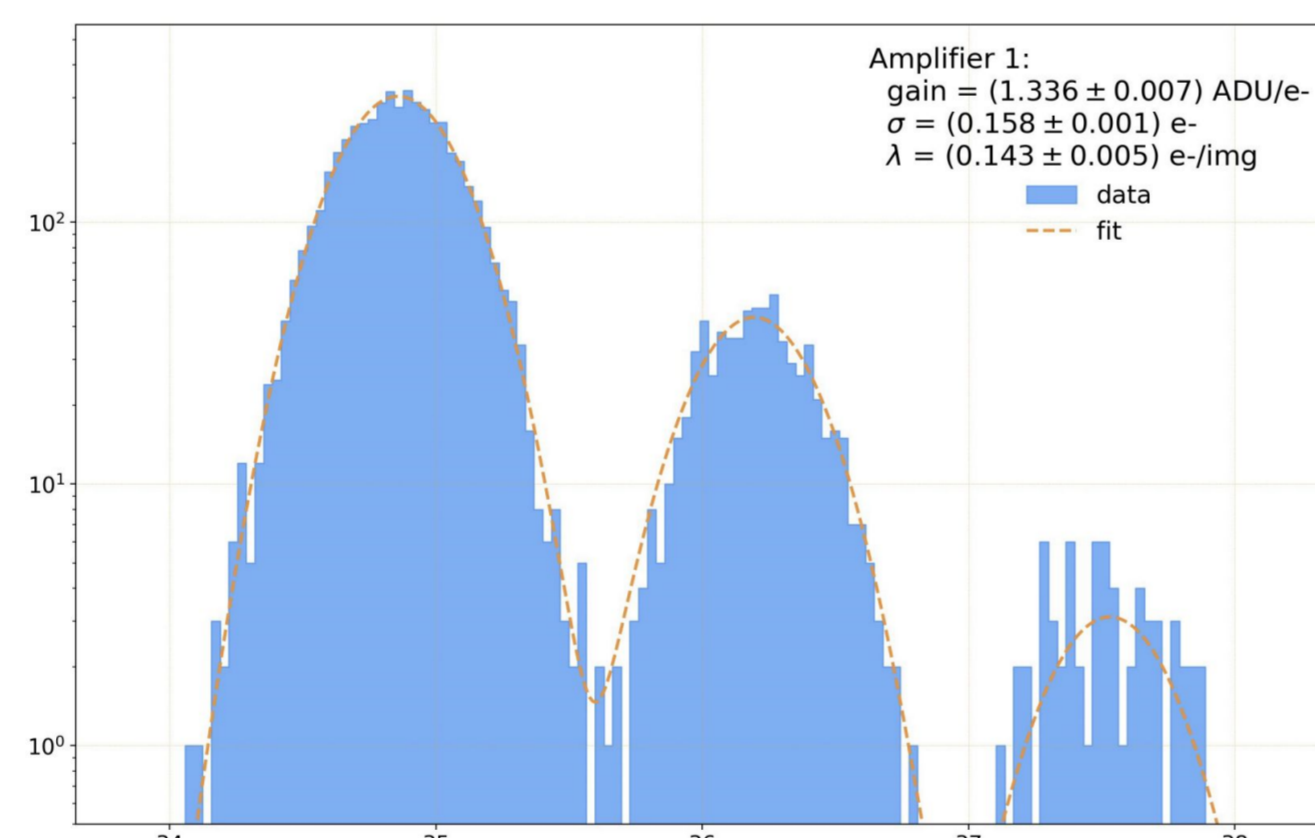
Charges generated by DM interactions with silicon are extracted from pixel bulk and transported to a skipper readout amplifier.

ACQUISITION AND CONTROL MODULE



- CCD POLARISATION
- READOUT CLOCKS
- FAST ADC DIGITIZATION
- FPGA

SINGLE ELECTRON RESOLUTION

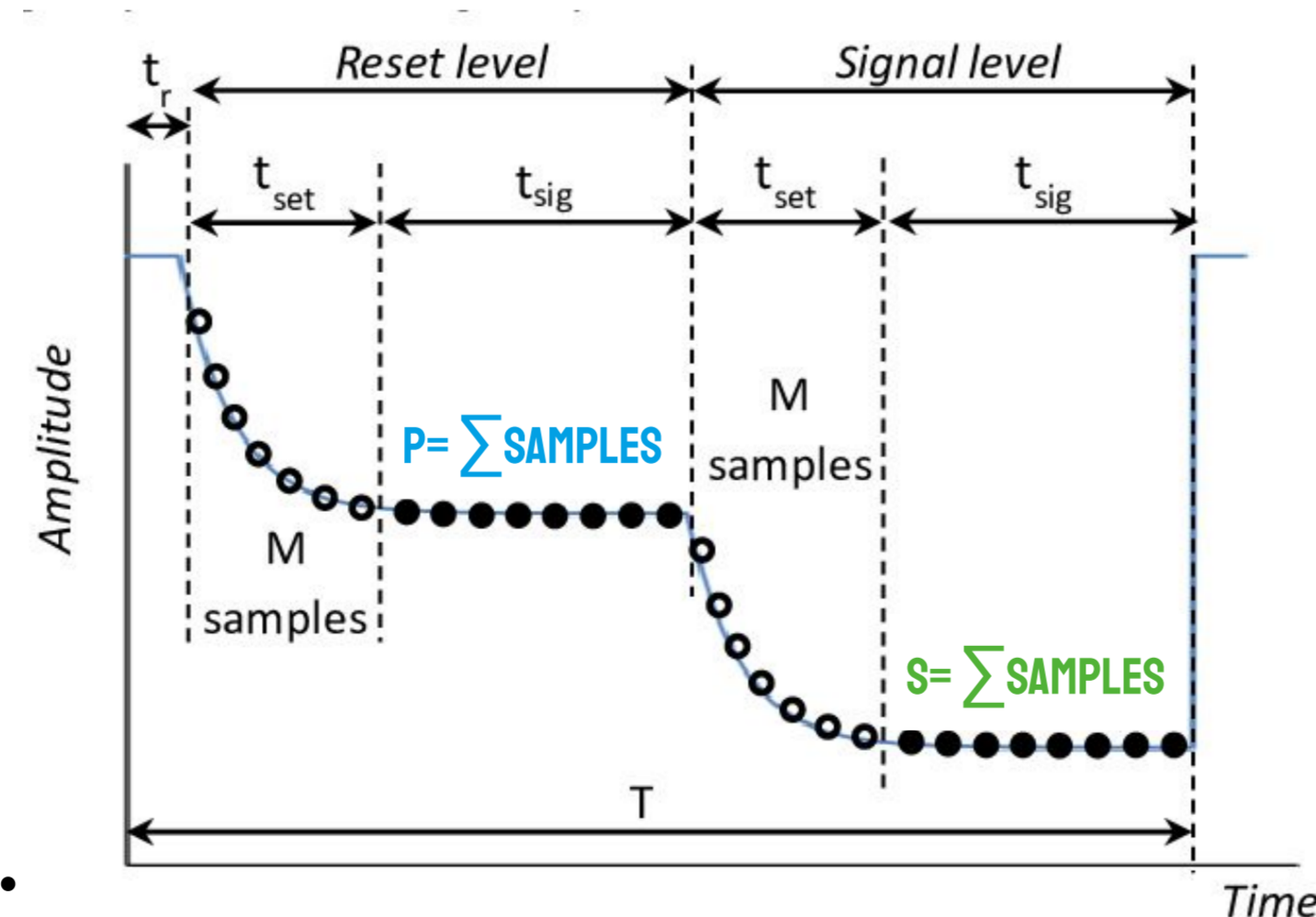


- 52 boards for 52 CCDs modules.
- Production and installation in 2024.

FPGA-BASED DATA PRE-PROCESSING

READOUT LEVELS:

- Raw data level.
- Integrated ramps level (S and P).
- Pixels value computation level $\sum(S-P)$.



DATA INTEGRITY:

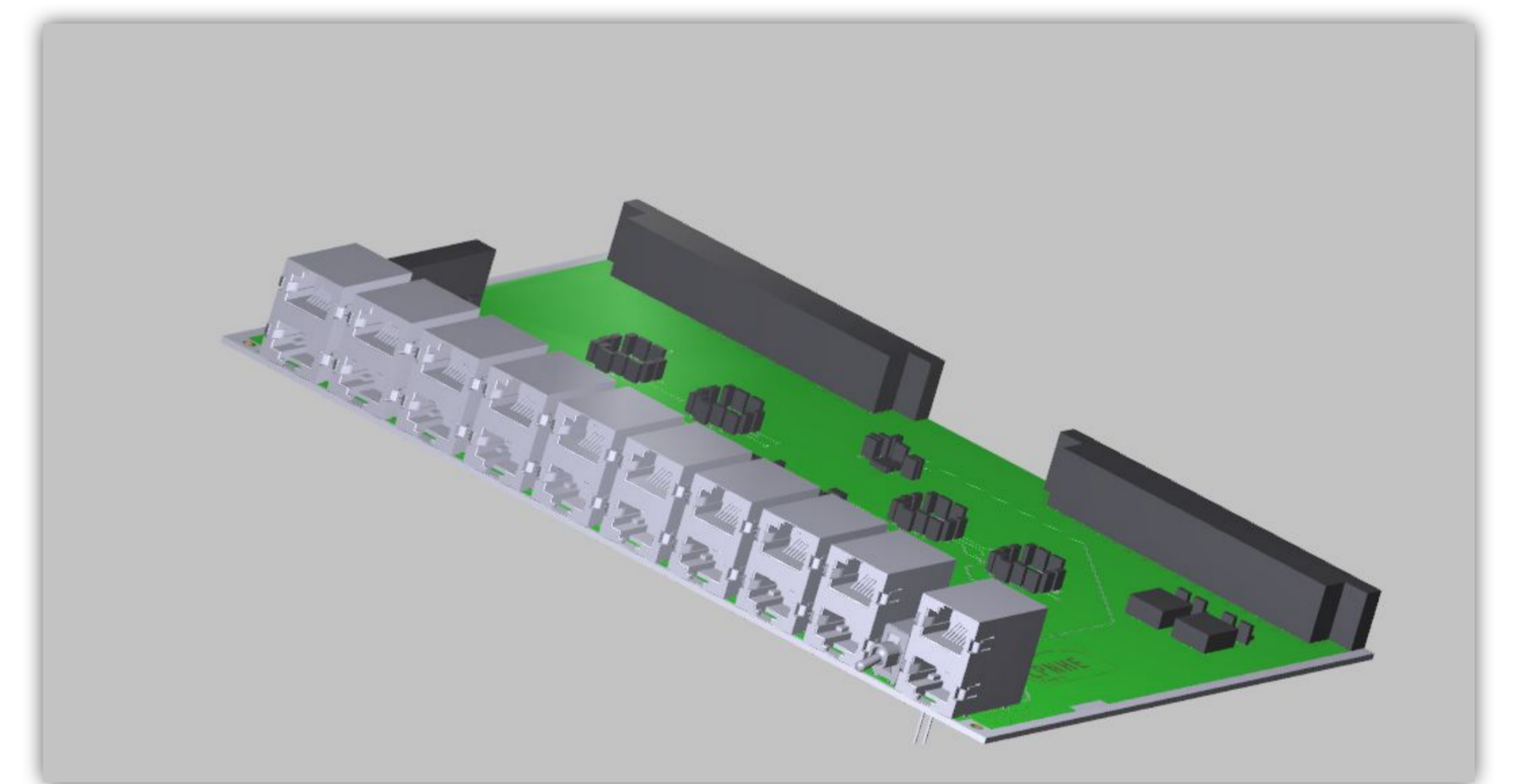
A procedure called *minimum bias data verification* allows to send raw data from time to time so that the decoder can ensure data integrity.

SYNCHRONISATION BOARD

AIM: Generates a 125MHz clock for FPGA operation and a trigger for CCDs simultaneous readout.

- Clock source: Internal quartz or external.
- 1 to 20 signal tree distributions with the possibility to daisy-chain several boards.

PROPAGATION TIMES: Clock O(1ns), trigger O(10ns).



DAQ SOFTWARE

