Test of the FERS electronics for muEDM beamtime

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MuEDM collaboration meeting in Pisa

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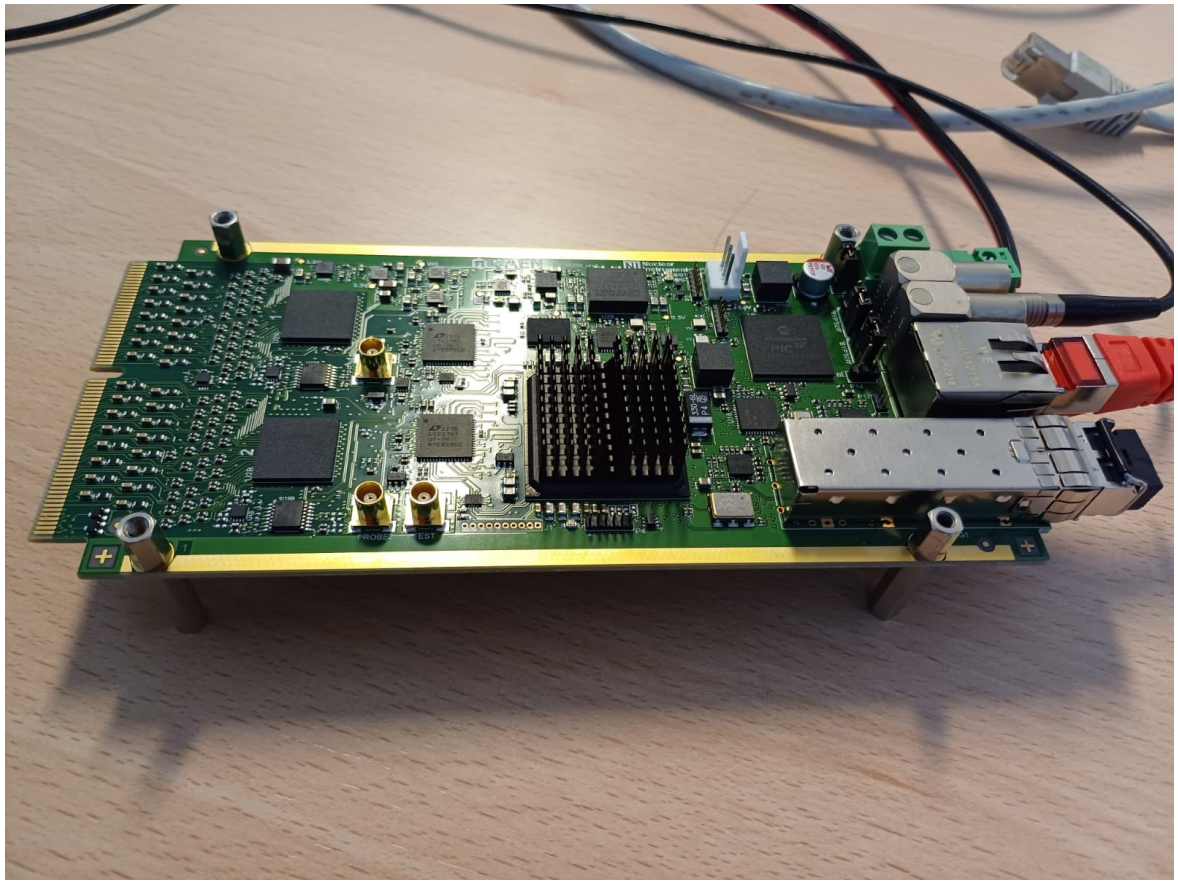
FERS A5202

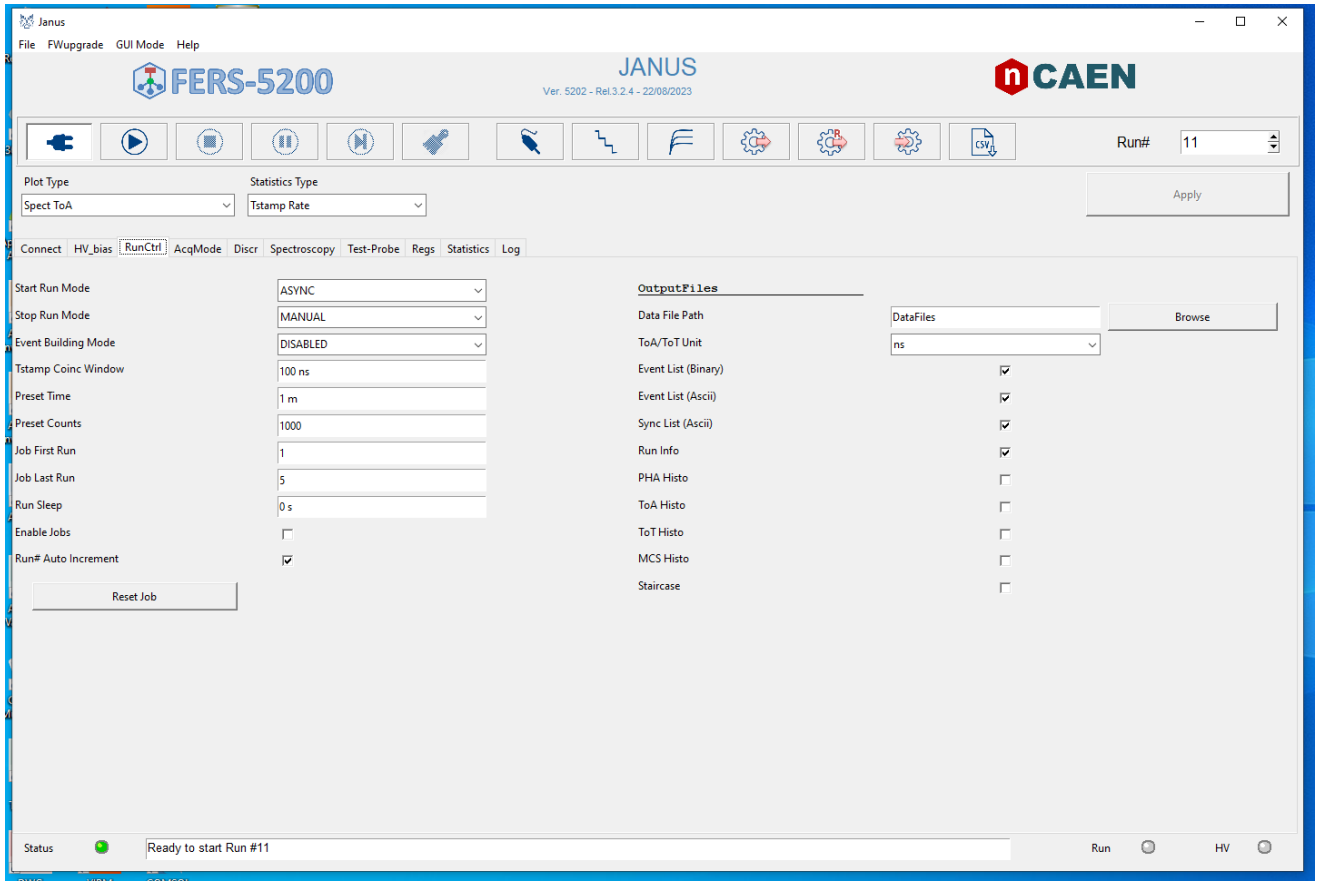


- System for readout of large detector arrays.
- Until 64 channels for each board.
- The board could be used alone (connected directly to pc) or different solution for large multiplicity (from 16 to 128 boards) with support units.
- Different acquisition types (spectroscopy, timing, counting).

For timing mode

- Independent channels
- Timing resolution ~250 ps RMS
- Possibility of external trigger

JANUS 5200 software



- Software JANUS 5200 from CAEN to use the board directly from a GUI on a windows or Linux PC
- With JANUS it is possible to set the different type of acquisition, trigger parameters, etc.
- The acquisition produced two types of files (binary, ascii).

Preliminary tests

We have a A5202 board in Pisa (provided by INFN colleagues).

Using Janus:

- we test the different procedures described by user manual to check the correct functioning of the board.
- FPGA can create a tunable and periodic signal that can be sent to channels to test board. We used a signal of 100 Hz to test different acquisition mode, and particularly the timing mode.
- Janus produced binary and ascii files for each test.

Preliminary test: readout software

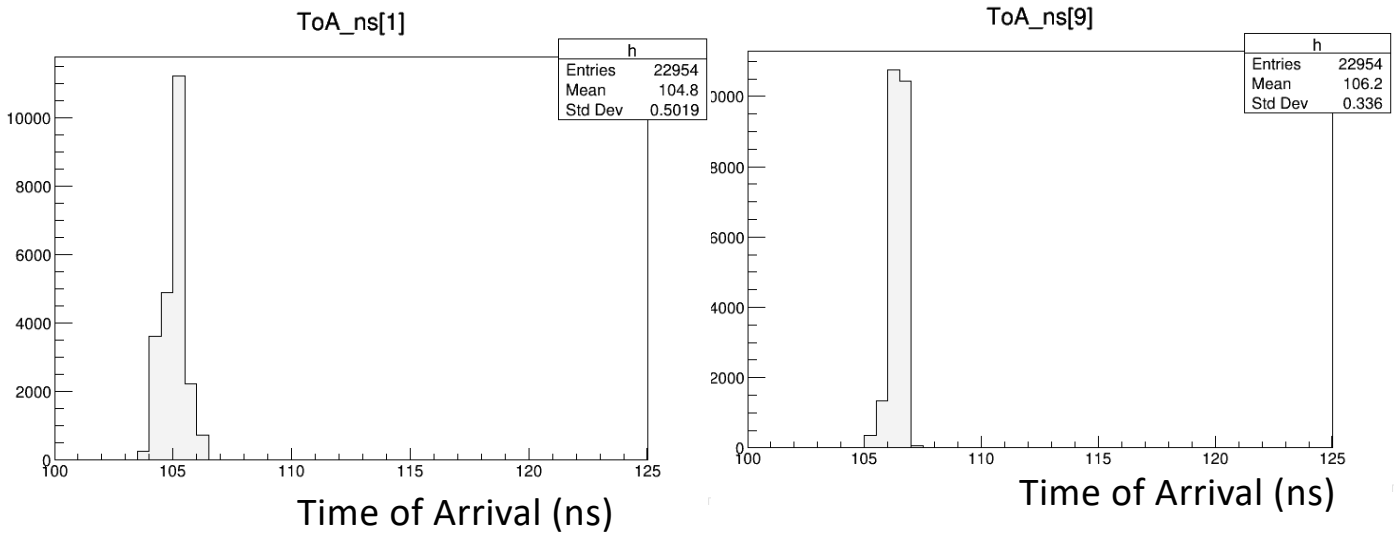
- We developed a macro in C/C++ to read the acquired binary file.
- The macro produces un output root file with a tree.
- The tree is filled with run and each event information.
- The macro has been developed to read each type of acquisition mode.
- We checked the macro comparing with ascii file produced by JANUS.

The structure of a timing event:

- Board ID, Reference time, Number of hits;

For each hit:

- Channel
- Time of Arrival
- Time Over Threshold (for a low-resolution spectroscopy)



Future plan

- Test with external pulser to simulate signals.
- Optimization of macro to find problems or bugs.
- Test with a real signal from HAMAMATSU SiPM.
- Sharing of macro when a common muEDM repository will be available.