



Contribution ID: 1

Type: Oral

The WaveDAQ system for the MEG II upgrade

Thursday, 28 May 2015 15:45 (15 minutes)

The MEG II experiment at PSI requires a new TDAQ system with stringent demands. About 9000 channels of waveform digitizing in the GHz range must be combined with SiPM biasing, preamplification and flexible triggering in a limited space. The new WaveDAQ system fulfils these requirements by introducing a new compact crate system which combines gigabit serial links in a dual-star topology with picosecond-precision clock distribution and high voltage biasing. An integrate shelf management monitors and controls the whole system including the high voltage part, and allows for remote firmware updates of all boards. The system combines 256 channels in a 3 HE crate including low voltage and high voltage power supplies, premaplification with variable gains, switchable signal shaping, 5 GSPS 12 bit waveform digitizing with the DRS4 Switched Capacitor Array Chip and 100 MHz 14 bit continuous digitization for trigger purposes. An integrated high precision clock distribution system allow for time measurements with a precision down to a few picoseconds.

The paper presents the design principles of the system, followed by test measurements with the prototype boards, and indicates how this flexible system can be used in many other applications in particle physics, gamma ray astronomy and in PET systems.

Primary authors: NICOLÒ, Donato (PI); Dr RITT, Stefan (PSI, Switzerland)

Co-authors: MORSANI, Fabio (PI); GALLI, Luca (PI)

Presenter: Dr RITT, Stefan (PSI, Switzerland)

Session Classification: Front end, Trigger, DAQ and Data Management

Track Classification: S5 - Front End, Trigger, DAQ and Data Management