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The GosipGUI framework for control and benchmarking of readout electronics front-ends

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The GOSIP (Gigabit Optical Serial Interface Protocol) provides communication via optical fibres between multiple kinds of front-end electronics and the KINPEX PCIe receiver board located in the readout host PC. In recent years a stack of device driver software has been developed to utilize this hardware for several scenarios of data acquisition. On top of this driver foundation, several graphical user interfaces (GUIs) have been created.
These GUIs are based on the Qt graphics libraries and are designed in a modular way: All common functionalities, like generic I/O with the front-ends, handling of configuration files, and window settings, are treated by a framework class GosipGUI. In the Qt workspace of such GosipGUI frame, specific sub classes may implement additional windows dedicated to operate different GOSIP front-end modules. These readout modules developed by GSI Experiment Electronics department are for instance FEBEX sampling ADCs, TAMEX FPGA-TDCs, or POLAND QFWs.
For each kind of front-end the GUIs allow to monitor specific register contents, to set up the working configuration, and to interactively change parameters like sampling thresholds during data acquisition. The latter is extremely useful when qualifying and tuning the front-ends in the electronics lab or detector cave.
Moreover, some of these GosipGUI implementations have been equipped with features for mostly automatic testing of ASICs in a prototype mass production. This has been applied for the APFEL-ASIC component of the PANDA experiment currently under construction, and for the FAIR beam diagnostic readout system POLAND.

Minioral

Yes

IEEE Member

No

Are you a student?

No

Author: ADAMCZEWSKI-MUSCH, Joern (GSI)

Presenter: ADAMCZEWSKI-MUSCH, Joern (GSI)

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