P7 (GEP=4)

FPGA training course 2
(SoC for data taking and DSP)

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Goal of Study

The students will learn the advanced scheme to use Xilinx Zynq. The student can start data taking and digital signal processing with Zynq after this course.

Contents

In recent years, SoC (System on a Chip) that integrates FPGA and CPU has been used in a wide range of fields. Modern SoCs also include high-speed ADCs and DACs. These SoCs are used in radio astronomy, digital radio, quantum computer control, and so on. These developments require knowledge of AXI, DMA, Linux, etc., in addition to conventional FPGA development. Arbitrary waveform generation function and spectrum measurement on SoC are treated as examples.

In this course, you will learn the basics of SoC, AXI and DMA handling. You will develop the code for data taking from front-end to a host computer. You are strongly recommended to get the FPGA training course 1 before getting this course.

Textbook and References

No text book

Progress Schedule

- ✧ Day 1
  - Lecture on AXIS
  - Lecture on PS
- ✧ Day 2
  - Lecture on PYNQ
  - Lecture on communication between PS and PL
- ✧ Day 3 and 4
  - Exercises (data taking with signal generator)

Other Details

Course Period	Winter
Place	Research Center for Neutrino Science Annex, 224
Number of Students	Max 1
Evaluation method	The evaluation method will be based on report (100 %).

In Addition