Design of detector system in Infrared High-resolution Spectrometer for the Subaru telescope

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We designed a new detector system of Infrared High-resolution Spectrometer (IRHS) in N-band (8-13 micron) region for the 8.2 m Subaru Telescope at Mauna Kea. The detectors used for IRHS are Si:As IBC focal plane array with 512*412 pixels, pixel size 30 micron, operating at 5K. For optimized detection of faint astronomical sources and ultra-fast data acquisition from the detector chip, a new detector control board is developped. It consists of 8-ch fast clock generator for readout, 4-ch 2.5 MHz fast A-D converters which are mounted on a full-sized PCI board to assure the fast data transfer rate to a host PC-AT compatible computer. By using a programmable logic device (PLD), it was confirmed to generate the clock waveform which can be used to read out at high frame rate(about 6 Hz).