39th SYMPOSIUM ON THE SEARCH FOR EXTRATERRESTRIAL INTELLIGENCE (SETI) – The Next Steps (A4)
SETI I : SETI Science and Technology (1)

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SETI BACK ENDS MADE INEXPENSIVE

Abstract

At the SETI Italia group, based at the Medicina (I) radiotelescopes, the design of low cost high frequency resolution back ends has been started. The aim is to allow any large or small radiotelescopes (lead by either professionals or amateurs) to perform SETI activities. The first approach is to implement a quasi-real time software spectrum analyzer, running on a quad-core fast PC equipped with a PCI 20 MHz 8 bits A/D converter. Such a software will be extremely optimized to quickly perform a Fast Fourier Transform on a programmed (either complex or real) number of points. The second approach is based on the configuration of a ROACH board (CASPER group –Berkeley- Ca) to handle and store high frequency signals. The main subsystems of the data process unit will be: an ultra fast A/D converter, a digital down converter, a multi bandpass filter, a data decimation algorithm, a programmable polyphase filter bank combined, through a CTM (Corner Turn Memory), to a fast fourier transform and finally an adder tree. Every subsystems store data in a volatile memory (block RAM) readable over the fast link connecting the workstation. The software for both the just mentioned approaches will allow to set configuration parameters, to plot online data and store data in the Serendip IV format in order to exploit the off line data visualization and post processing, already written for it.