IAC-03-IAA.9.1.02

SETI-Italia 2003: Status Review

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The Italian SETI Program exploits a Serendip IV high-resolution spectrometer in a 24 million channels configuration, obtained also thank to the support of the SETI Institute. Observations are performed with such a system connected in piggy-back mode to the 32-meter VLBI dish and in the radio astronomical bands up to 23 GHz.

At the end of 2002, a more flexible and accurate software was implemented that makes use of the generalized Hough transform to cope for the unknown Doppler shift (of a candidate signal) in time. In addition, much work was done to implement the KLT (Karhunen-Loève Transform) for a more profound signal detection. This goal was achieved by resorting to an expandable fast Mercury Altivec CPUs cluster (VME). Signal processing by virtue of the KLT allows the detection of a much wider set of radio signals: i.e. both narrow- and wide-band signals embedded in both white and colored noise.

At present, the KLT software still is under test but first results make us confident that it will represent a good signal detection tool. The computational load for the implementation of the KLT algorithm is unfortunately quite heavy and the solutions introduced to solve some of its crucial features are described in this paper.