59th International Astronautical Congress 2008

37th SYMPOSIUM ON THE SEARCH FOR EXTRATERRESTRIAL INTELLIGENCE (SETI) – The Next Steps (A4.) SETI I – SETI Science and Technology (1.)

Author: Dr. Stelio Montebugnoli INAF - National Institute for Astrophysics, Villafontana Bo, Italy, s.montebugnoli@ira.inaf.it

Prof. Dr. Cristiano Cosmovici IFSI/INAF, Rome, Italy, cristiano.cosmovici@ifsi-roma.inaf.it Dr. Jader Monari INAF - National Institute for Astrophysics, Villafontana, Italy, j.monari@ira.inaf.it Mr. Salvatore Pluchino INAF-IRA, Imola (BO), Italy, salvo.pluchino@tin.it Ing. Luca Zoni INAF - National Institute for Astrophysics, Villafontana, Italy, lzoni@med.ira.cnr.it Dr. Marco Bartolini IRA-INAF, Forlì, Italy, m.bartolini@ira.inaf.it Dr. Andrea orlati IRA-INAF, Bologna, Italy, a.orlati@ira.inaf.it Dr. Emma Salerno IRA-INAF, Bologna, Italy, e.salerno@ira.inaf.it Dr. Giuseppe Pupillo OATO INAF, Bologna, Italy, g.pupillo@isac.cnr.it

THE NEXT STEPS IN SETI-ITALIA SCIENCE AND TECHNOLOGY

Abstract

The Italian Medicina Radioastronomy Station (nearby Bologna) is equipped with two antennas: the 32 mt (VLBI) dish and the Northern Cross, a large T-shaped parabolic/cylindrical antenna (30.000 sqm). So far SETI observations have been performed using a SERENDIP IV high resolution spectrometer connected to the VLBI dish in "piggy back" mode configuration. In order to facilitate data interpretation and to introduce innovative methods to search for possible extraterrestrial signals, we are planning to make use of the the large UHF Northern Cross transit telescope. Sky observations performed at least within two months, could provide for each day a number of matrices labeled according to the observing sidereal time. The entire set of matrices will be characterized an averaged spectrum on each row per each day. Keeping constant the transit antenna declination, if a coherent signal comes from a definite position of the sky, we will obtain a "flag on" in the same matrix at the same sidereal time. This means that such a detection could also be considered already "confirmed" since it comes from the same region of the sky and is observed regularly. An extremely powerful processing board based on a multi-FPGAs (Field Programmable Gate Array) core has been developed and under programming. This is conceived to be the processing core for this new kind of investigations.