57th International Astronautical Congress 2006

35th Symposium on The Search for Extraterrestrial Intelligence (SETI) – The Next Steps (A4.)
SETI I - Technical Aspects (1.)

Author: Dr. Dan Werthimer
University of California, Berkeley, CA, United States, danw@ssl.berkeley.edu

SIX BERKELEY SETI PROGRAMS: SETI@HOME II, SERENDIP V, ASTROPULSE, SPOCK, SEVENDIP AND DYSON

Abstract

Most SETI projects have searched for simple narrow band radio signals at wavelengths ranging from 10 to 30 cm. Is this the best strategy?

The Berkeley SETI group conducts searches at visible, IR and radio wavelengths. We report on six SETI programs which cover a wide variety of signal types and span a large range of time scales: SETI@home searches for radio signals with time scales ranging from mS to seconds. SEVENDIP searches for nS time scale pulses at visible wavelengths. Astropulse searches for dispersed uS time scale radio pulses from extraterrestrial civilizations, pulsars, or evaporating primordial black holes. SERENDIP and SPOCK search for continuous narrow band signals in the radio and optical bands respectively. DYSON searches for infrared excess from energy pigs – advanced civilizations that drive SUV's and hog a lot of energy.

SETI@home II and SERENDIP V are radio sky surveys at the 300 meter Arecibo telescope. Commensal observations have been conducted almost continuously for the past ten years and are ongoing. Most beams on the sky visible to the Arecibo telescope have been observed four or more times.

We rank SERENDIP and SETI@home candidate signals based on the number of independent observations, the strength of the signals, the closeness of the signals in frequency and sky position, and the proximity to stars, planetary systems, galaxies, and other interesting astronomical objects.

SETI@home uses the CPU power of volunteered PCs to analyze data. Five million people in 226 countries have participated. Combined, their PCs form Earth's most powerful supercomputer, averaging 80 TeraFLOPs and contributing over two million years of CPU time.