

42nd SYMPOSIUM ON THE SEARCH FOR EXTRATERRESTRIAL INTELLIGENCE (SETI) – The
Next Steps (A4)
SETI 1: SETI Science and Technology (1)

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AN ENHANCED PIGGYBACK MODE FOR SETI OBSERVATIONS

Abstract

The authors propose a new "enhanced piggyback mode" for SETI observations based on SERENDIP philosophy: it makes use of whatever observing plan (sequence of frequencies, sky coordinates, and polarizations) is under way at host observatory. In addition to the two key elements of SERENDIP (i.e. the automated data acquisition system and the off-line post-processing analysis to reject RFIs), we introduce a new set of features: 1) separated power spectrum long time-average (several seconds or minutes) within every nodding cycle phase (this will maximize the radiometric sensitivity of each spectrum channel, assuming to carefully compensate the Doppler effect WRT target barycenter; 2) a new dynamic adapted thresholds (to reject or not the averaged data) based on available time-average, spectral radiometric sensitivity and distance of the target. Moreover, during the VLBI sessions (some months per year) we intend to develop a specific correlation processing of the data coming from Medicina, Noto and others antennas, with the aim to reject any interference and strongly confirm possible candidate signals.