

**SEARCHING FOR COST-OPTIMIZED INTERSTELLAR BEACONS**

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What would SETI Beacon transmitters be like if built by civilizations with a variety of motivations, but who cared about cost? We studied in a companion paper how, for fixed power density in the far field, we could build a cost-optimum interstellar Beacon system. Here we consider, if someone like us were to produce a Beacon, how should we look for it? High-power transmitters might be built for wide variety of motives other than two-way communication; Beacons built to be seen over thousands of light years are such. Altruistic Beacon builders will have to contend with other altruistic causes, just as humans do, so may select for economy of effort. Cost, spectral lines near 1 GHz and interstellar scintillation favor radiating frequencies substantially above the classic “water hole.” Therefore, the transmission strategy for a distant, cost-conscious Beacon will be a rapid scan of the galactic plane, to cover the angular space. Such pulses will be infrequent events for the receiver. Such Beacons built by distant advanced, wealthy societies will have very different characteristics from what SETI researchers seek. Future searches should pay special attention to areas along the galactic disk where SETI searches have seen coherent signals that have not recurred on the limited listening time intervals we have used. We will need to wait for recurring events that may arrive in intermittent bursts. Several new SETI search strategies emerge from these ideas. We propose a new test for SETI Beacons, based on the Life Plain hypotheses. How would observers differentiate Beacons from pulsars or other exotic sources, in light of likely Beacon observables? Bandwidth, pulse width and frequency may be distinguishing features.