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THE TRILLION PLANET SURVEY THE SEARCH FOR DIRECTED INTELLIGENCE AND
IMPLICATIONS OF DIRECTED ENERGY FOR SETI

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Abstract

We will discuss the implications of the current photonics revolution for SETI and our implementation of a search for extraterrestrial directed energy sources. We are on a “Moore’s Law” like trajectory with a doubling time of about 18 months over the last 25 years for CW fiber lasers and laser amplifier and we now possess the ability to project our presence (modulo the speed of light) at vast distances if there is “anyone out there” to listen and with similar technological evolution. The reverse is, of course, much more interesting – can we “detect them”. If we possess this capability and are still relatively primitive in terms of our evolutionary time scale compared to our cosmological time scale then we can do some mild scaling and conclude we are already at a remarkable point in terms of visibility and can already detect comparable civilizations to what ours will soon be across nearly the entire horizon. We will show that a civilization at cosmological distances can be detected for a civilization class comparable to or beyond us in capability and that simple “intelligent targeting strategies” allow full “blind-blind” surveys with simple detection system with sub meter detection optics out to the nearest galaxies. We will discuss the details of detection strategies that allow us to search more than one trillion stars and the current status of this search. We will discuss the details of fundamental backgrounds that limits the SNR for a survey and the implementation of blind “beacons” and blind “detection” strategies by understanding the covering fraction of habitable zones and the use of “intelligent targeting” by a broadcasting civilization.

For more information and papers see: www.deepspace.ucsb.edu/projects/implications-of-directed-energy-for-seti/

“The Search for Directed Intelligence”, Lubin 2016 REACH – Reviews in Human Space Exploration – Vol 1, 20-45, March 2016 arxiv.org/abs/1604.02108