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**CHALLENGES OF “COSMIC ARCHAEOLOGY” SEARCHES FOR ETI**

**Abstract**

Searching for stellar-scale archaeological artifacts like Dyson Spheres (DS) or Kardashev civilizations is an interesting alternative to conventional SETI searches since these artifacts do not posit the transmission of a signal. Dyson Spheres are hypothetical stars purposely shrouded by a thick swarm of broken-up planetary material to better utilize all of the solar energy. A number of searches have been carried out for both partial and fully shrouded DS. I have conducted a search using the IRAS data base. The search has now been extended by loosening the constraints and making use of the Calgary datacollection of IRAS low resolution spectrometer data to look for fits to black body spectra. Several complications emerge when a more comprehensive search is undertaken. One problem is that less luminous objects will have poorer fits but may still be DS candidates. Likewise partial DS cannot be ruled out so that the presence of a visible or near infrared signature cannot eliminate an object as a type of DS. Another question is raised by the presence of various silicon features in the spectra since these might be left over in the creation of the DS. These loosening constraints let several different natural stellar source types through the search net. Results on the broadened search will be reported. Similar considerations may also challenge other searches like Kardashev searches. As noted by several authors these factors may indicate that definitive searches will require more sophistication such as the use of better spectroscopy and radio astronomy. On the positive side there is increasing understanding of the spectroscopy of some of the natural source types so that future studies may be able to better separate natural and artificial objects.