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LIMITATIONS FOR PURE DYSON SPHERE SEARCHES

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Dyson suggested an advanced civilization might capture energy radiating from a star by breaking up planets to form a loose shell surrounding the star. The shell would reradiate energy as an infrared black body spectrum with a characteristic temperature of 300 °K. There have been several searches for partial Dyson spheres, notably by Jugaku. These searches look for infrared excesses. A recent search of the IRAS database by Timofeev, et al. found examples of Dyson sphere signatures but recognized the possibility of confusion with circumstellar gas clouds. I have examined the IRAS database for examples with good black body fits in the 200-400 °K regime and no visible associated star. The IRAS 100-micron filter was not used because it was subject to wide zodiacal and interstellar cloud variations. Many sources pass this cut. The black body fitting process is now being refined. Sources visible in the 2MASS Ks band with luminosities greater than 10 Jy in the IRAS 12-micron band (about 40%) can be incorporated in the fits. These fits can possibly better distinguish thick circumstellar dust clouds from swarms of larger-scale objects. This list could serve as a target list for SETI searches.