The 170 µm Serendipity Survey

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The ISOPHOT Serendipity Survey utilized the otherwise unused slew time between ISO's pointed observations with strip scanning measurements of the sky at 170 um. During ISO's lifetime, nearly 550 hours of observing time were collected, leading to an incomplete sky survey with a coverage of ~ 15%. The ISOPHOT Serendipity Survey is the only large scale sky survey long-ward of the IRAS 100 um wavelength limit to date.

The first list of 115 point sources associated with catalogued galaxies indicated that a large fraction of galaxies have a spectral energy distribution rising beyond 100 um, indicating a cold (14K < T < 20K) dust component. This increases the derived dust masses by a factor 2 - 10, and leads to gas-to-dust ratios much closer to the canonical value for the Milky Way. A number of low-luminosity galaxies also have a high 170 um / 100 um flux ratio, indicating a very cold dust component (T < 15K) and thus only very low-level star formation activity. Results of ground-based follow-up observations to investigate the nature of these cold galaxies will be reported. A much larger galaxy catalogue of ~ 1000 sources is being prepared.

A similar Serendipity Slew Survey with FIRST/PACS is currently being discussed in the PACS consortium. If technically feasible, it would increase tremendously the number of sources observed with an angular resolution necessary to allow an unambiguous identification at other wavelengths. Furthermore, it would avoid the "knowledge bias" of observatory telescopes, and has thus the potential of detecting hitherto unknown FIR emitters.