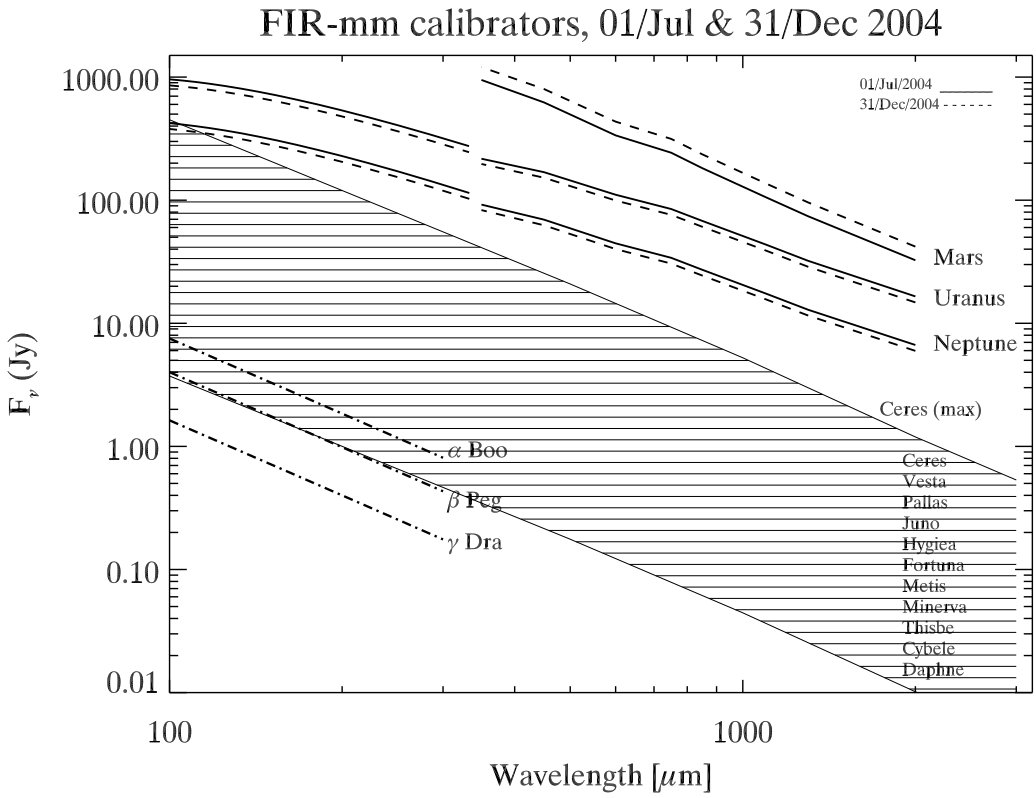
The Asteroid Preparatory Programme

The goal of the ASTEROID PREPARATORY PROGRAMME is to establish a set of about 50 asteroids as far-IR/submm/mm calibrators for HERSCHEL, ASTRO-F and ALMA. The selected asteroids will fill the flux gap between Mars, Uranus and Neptune and the mid-IR calibration stars. ISO used 10 of these asteroids successfully for far-IR calibration, SPITZER integrated the fainter ones in the MIPS calibration scheme and several groundbased observatories established observing programmes either in support for the space projects or for own calibrators purposes.



Celestial standards play a major role in astronomy. They are needed to characterise the performance of instruments and they are an important prerequisite for accurate photometry. With the access to the far-IR, submm and mm wavelength range through satellites, airborne and groundbased instruments, it became necessary to establish new calibrators for these wavelengths. The traditional far-IR/submm/mm calibrators, the outer planets, are too bright or cause nonlinearity problems for instruments on upcoming sensitive space missions like HERSCHEL or ASTRO-F. Stellar standards are quite faint in this range and pose problems of their own. The large flux gap between these two types of calibrators can be filled by a set of asteroids (Müller & Lagerros, A&A 1998, 2002, 2003). The "Asteroid Preparatory Programme" is currently conducted together with the HERSCHEL and ASTRO-F calibration teams. We investigate the physical and thermal properties of about 50 asteroids. All of them are large, almost spherical and belong the the main-belt. They cover the flux range between about 1 and several hundred Jansky at 100 μm and at 1 mm they still reach up to 10 Jy. Thermophysical model predictions (light curves, SEDs or monochromatic fluxes) are accurate on the 5-20 % level, depending on the object, the observing and the illumination geometry.

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