Selection of a Sample of Suitable Potential Mid-Infrared Calibration Stars from the Hipparcos/Tycho Catalogue

Fabiola Martín-Luis[1], Mark Kidger[2], Martin Cohen[3]

[1] *Departamento de Astrofísica, Universidad de La Laguna*
[2] *Instituto de Astrofísica de Canarias*
[3] *Vanguard Research, Inc., Scotts Valley, CA 95066, and Radio Astronomy Laboratory, University of California, Berkeley, USA*

With the increasing availablity of sensitive mid-IR area detectors on large telescopes there is a pressing need to increase the number and faintness of mid-infrared flux standards that are available. We have searched the Hipparcos/Tycho catalogue for stars of type KIII and AV that are suitable potential standard stars for the mid-infrared. Colour, variability, and astrometric criteria have been used. We discuss the progress that has already been made towards the resolution of the problem of calibration, particularly the studies aimed at obtaining an initial list of normal stars with reliable spectral type and good visible photometry and that have a high density on the sky. We discuss a method for templating highly accurate fluxes from 1-30 microns from the visible colours and spectral type of a star of type AV or KIII that will allow us to predict fluxes with great accuracy with a resolution $\Delta\lambda/\lambda \sim 3000$. This resolution is well adapted to proposed infrared instruments on the Spanish 10-m Gran Telescopio Canarias.

Our aim is to produce a list of 1000 standard stars with highly accurate calibration from 1-30 microns for Day 1 of the GTC. Work in progress has produced an initial list of 7000 candidate stars north of declination -44°. MSX infrared photometry has been found for 881 of the stars included in our all-sky survey, allowing us to extend the spectral coverage significant fraction of these stars into the mid-infrared. These infrared data and planned near infrared observations for summer 2000 will provide a valuable test of our model of the 1-30 micron spectrum.