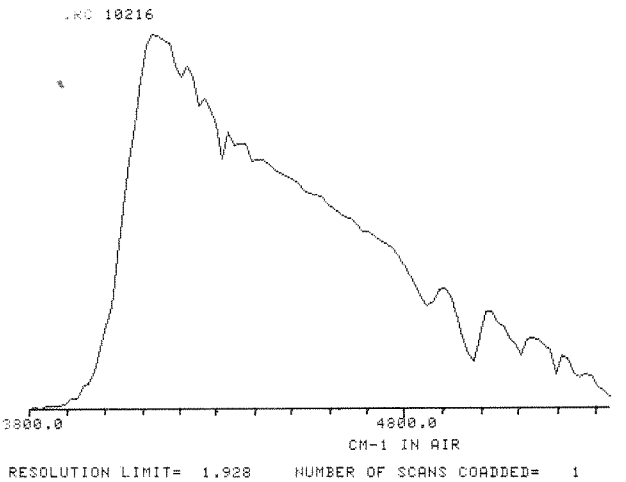
The IR Runs

This past semester, the telescope was equipped with the IR top end for the equivalent of one month. The first semester of 1983 starts with the same configuration, which means that the infrared vocation of the telescope is well established.

The first extensive use of the focus was not without some problems. Engineering work often overtook the observations, and if the scientific results fell short of expectations, many technical problems did get solved. The mountings of the IR upper end were much smoother than in the past, thanks to the machining done on the mating surface and the improvements to the handling ring system. The chopping secondary system was extensively reworked and adjusted prior to the run. One of the principal objectives here was to make the rotation axis of the chopper assembly exactly colinear with the optic axis. The effort paid off when we later found we could rotate the chopping direction through a full 180° with less than 5 arcseconds excursion of the mid point between the two stellar images.

The first run belonged to Bob McLaren and co-workers and was nominally intended for infrared photometry of Cepheids in M33. However, most of the time was spent on engineering, including alignment of the TV-guiding optics and the correction of several dewar problems that included microphonics and a sticky aperture changer. Nonetheless, these observers were very pleased to see that photometry of Cepheids at H=16 was possible with a few minutes of integration, and objects as faint as V=19 could be seen on the TV guiding system. As a result, it was hoped that Epchtein's following run, which involved infrared photometry of maser sources, would be productive. Unfortunately, difficulties with the telescope control system and a problem with the chopping secondary wiped out the run.
The chopper problem was solved in time for the Howell/Dyck run; the first use of the photometer for IR speckle interferometry. Time was lost to weather and software problems, but Howell was able to work successfully for one night. The next observers were Sibille and Chelli of Lyons, who brought their InSb CID mosaic to do bidimensional speckle interferometry. This new and not yet fully tested device, prevented them from obtaining much science on this first run. In parallel with this night-time work, R. Papoular and J.P. Maillard used the telescope during the day to analyse the IR sky noise at 4 and 5 microns and to test a 3-position chopping mode which more effectively cancels sky noise fluctuations.
J.P. Maillard had charge of the second IR time devoted to the FTS. It was really the first cassegrain run of the instrument. The weather was fine and the relative humidity close to 0%. Two different scientific programs were proposed: with A. Chalabaev, the IR emissions of some hot stars: with T. Amano, C. Yamada and P. Feldman, the detection of new radicals in the envelope of some cool stars. The two programs were almost fulfilled, but a complete reduction of the data is necessary to really evaluate the results. A serious electronic problem still plagues the instrument, preventing use of all its flexibility. However, this run allowed a stability test of the servo-system, which performed well in all the attitudes of the telescope.
At last, with the assistance of the CFH staff, T. Lebertre was able to obtain images about diffraction-limited of several late type objects at 10 microns, with a 16 elements Si-As array working for the first time at CFHT.



Display of the complete range of the spectrum of IRC 10216 in the K Filter, recorded with the Fourier Transform Spectrometer, after ten minutes of integration. The displayed spectrum, computed in real-time, is undersampled. Nonetheless, envelopes of stellar CO band and telluric CO_2 bands are easily detectable.

Emilie Experiment

This charming name is a contraction of "EMIssion MILLImétrique". Funded by INAG, it is a joint venture of three French institutions: Laboratoire de Physique Stellaire et Planétaire (Verrières-Le-Buisson), Institut d'Astrophysique de Paris, Centre d'Etudes Spatiales (Toulouse).

The instrumentation is composed of a servo-controlled steerable coelostat, which can do fast scannings of large amplitude. A fixed concave mirror 47 cm in diameter follows the coelostat. It feeds a photometer equipped with specially designed filters centered in the atmospheric windows located around 1 mm in wavelength, and bolometers cooled at 1°K. The entire experiment is commanded by a microprocessor equipped with a real time video display system. Emilie's goal is the observation of the millimetric emission of the Galactic plane.