Fig. 1: *Radial velocity histograms in regions I and II. The peak at small velocities, which appears at about the same location in the two fields, represents galactic stars. In contrast, the peaks corresponding to the LMC stars are at very different velocities in the two regions; this difference is due to the rotation of the Large Magellanic Cloud.*

(1) a catalogue of WR stars (Fehrenbach et al. 1976)
(2) a list of star-like or small emission-line objects, planetary nebulae or H II regions (Fehrenbach et al. 1978). We have described the spectral characteristics of some of them.

In addition we have found a galactic star showing very strong CH bands and having a RV of 450 km s^{-1}.

The study of the LMC itself is now almost finished but we are presently studying several fields at $-30°$ galactic latitude to find out if the number of high velocity galactic stars is larger in the direction of the LMC than in other directions.

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TAURUS – The Imaging Fabry-Perot at La Silla

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During August–September 1981 TAURUS, a scanning Fabry-Perot system used in conjunction with the University College London Image Photon Counting System, was installed at the Cassegrain focus of the 3.6 m telescope at La Silla. It was used in a variety of programmes, all requiring velocity information as a function of position in extended objects, such projects being especially suited to this type of observing technique. Programmes included velocity structure in barred spiral galaxies, velocity structure in merging and interacting "active" galaxies, velocity structure in supernova remnants, including an attempt to measure the velocity structure of the Fe XIV 5303 emission N 49, a SNR in the LMC.

TAURUS, an imaging Fabry-Perot system, was developed as a collaborative project by the Royal Greenwich Observatory and Imperial College London (*Monthly Notices of the Royal Astronomical Society* **191**, 675, 1980; *M.N.R.A.S.* in press) and is capable of obtaining seeing-limited velocity field information over a 9 arcminute field on a 4 m telescope. At the detector (the IPCS) the image of the source is modified by the fringe pattern of the capacitatively stabilized servo-controlled Fabry-Perot. As the Fabry-Perot is scanned, this fringe pattern tracks radially across the field and each pixel of the detector maps out a spectral line profile within the bandpass of the "blocking" interference filter. At each F-P spacing a picture (200 × 200
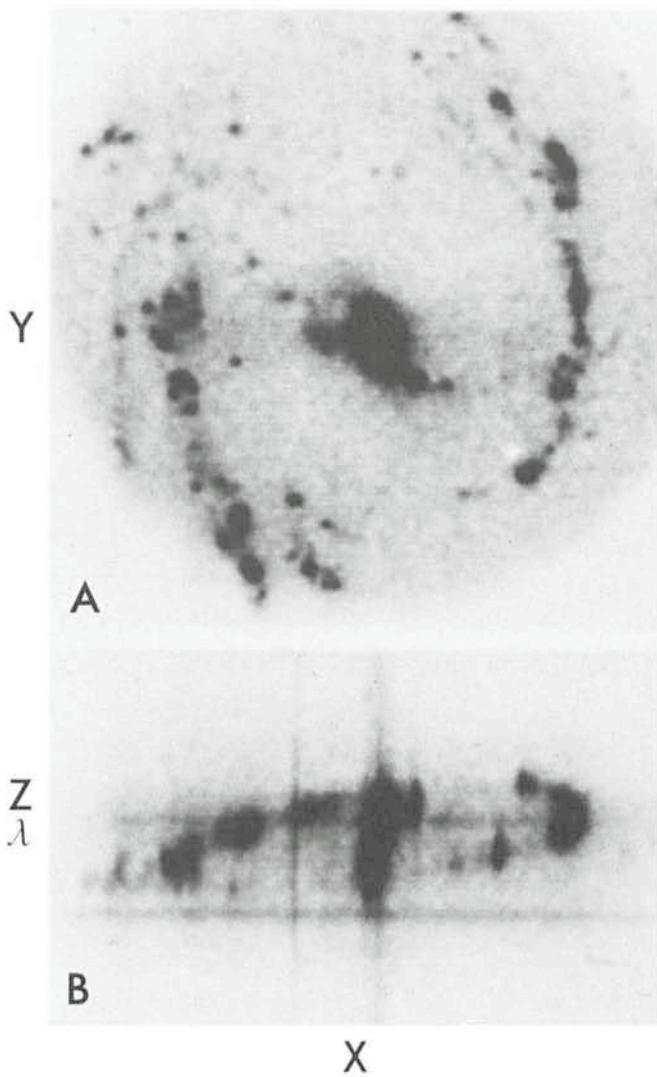
Fig. 1 *illustrates the data obtained for the barred spiral galaxy NGC 1365. A is an image of NGC 1365 resulting from compacting the cube in the Z (or λ) direction. Therefore it contains images of NGC 1365 over a velocity range of 1,000 km/sec at a wavelength corresponding to Hα. B results from compacting the data cube in the Y direction and therefore shows velocity as a function of X position (in this case right ascension) over the whole galaxy. The vertical straight lines in B represent the continua of stars in the field, while the horizontal streaks are night sky features. The ellipsoidal structure in B traces the regular large-scale rotational motion of the H II regions in this galaxy.*

Fig. 2 *is a similar illustration for the southern filament of the SNR RCW 103 observed at a wavelength corresponding to [O III]5007. In Fig. 2B one can see many vertical straight lines representing stellar continua. One can also see a region of broad emission corresponding to a velocity range of several hundred kilometres/second. This of course corresponds to the large random turbulent motions generated by shock waves in supernova remnants of this age and size. At either end of the range in X one begins to see a much narrower range of velocity corresponding to positions outside the main filament and probably corresponding to a surrounding H II region. One can note this correspondence with Fig. 2A.*

pixels) is recorded on computer disk. 100 pictures make up a complete scan, covering for example 1,200 km sec^{-1} free spectral range (this range in practice depends on the particular etalon). In this manner a 3 D data cube of the field is built up where (X, Y, Z) are typically (200 pixels, 200 pixels, 100 steps).

If we plot the intensities recorded by 1 pixel through the scan range, we see the spectral line profile for that part of the object being observed. Because the light from different parts of the field passes through the etalon at different angles, there is a shift in the wavelength zero-point as a function of field angle. Because of this the (X, Y) pictures of raw data are not monochromatic. This positional dependence of wavelength is calibrated and then corrected for by shifting each profile in the computer so as to line up the zero point at all (X, Y) positions—a process known as phase correction. The phase corrected data cube has X, Y as spatial dimensions and Z as a wavelength
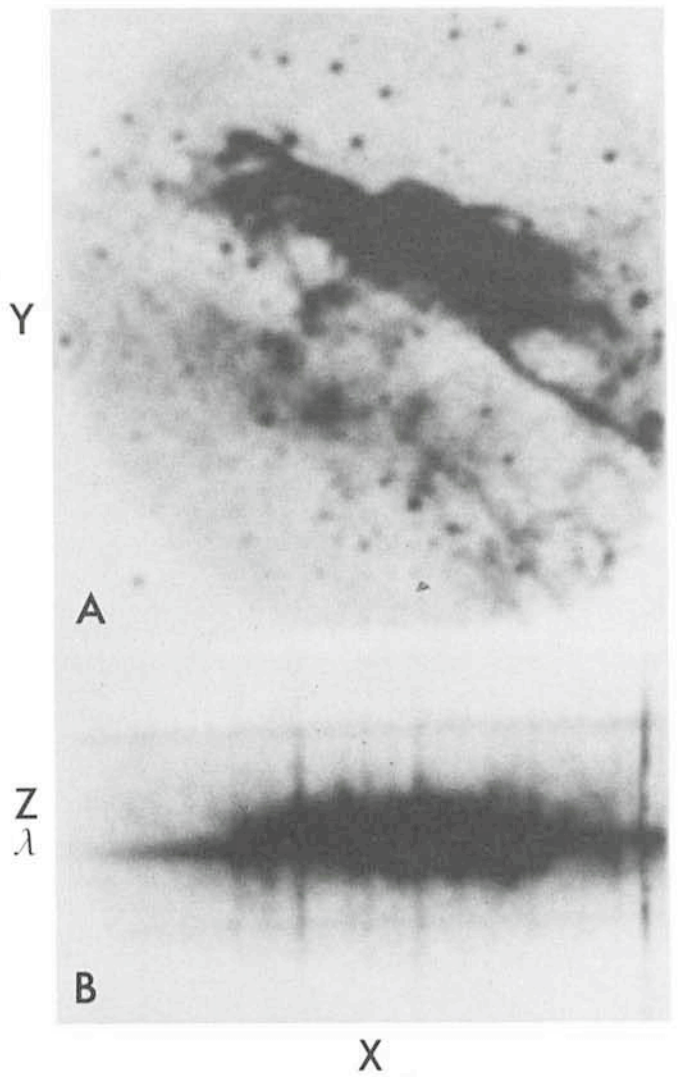
dimension, i. e. more than 4 Megabytes of information. These data are then analysed by viewing, X, λ or Y, λ plots or as a "movie" of a rapid sequence of (X, Y) pictures as a function of λ, enabling us to view different parts of the objects at different velocities. By summing all the pictures in λ we may produce the equivalent narrow band interference filter pictures, as if the Fabry-Perot were not in the system. By scanning in X or Y we may produce an X, λ or Y, λ plot similar to the display of 2D long slit spectra. In these, night sky lines should appear straight across the field, indicating the accuracy of the phase-correction process.

It is worth stressing that an IPCS is an essential component of this instrument because of the photon-counting capability, fast readout, negligible instrumental noise and large detector format.
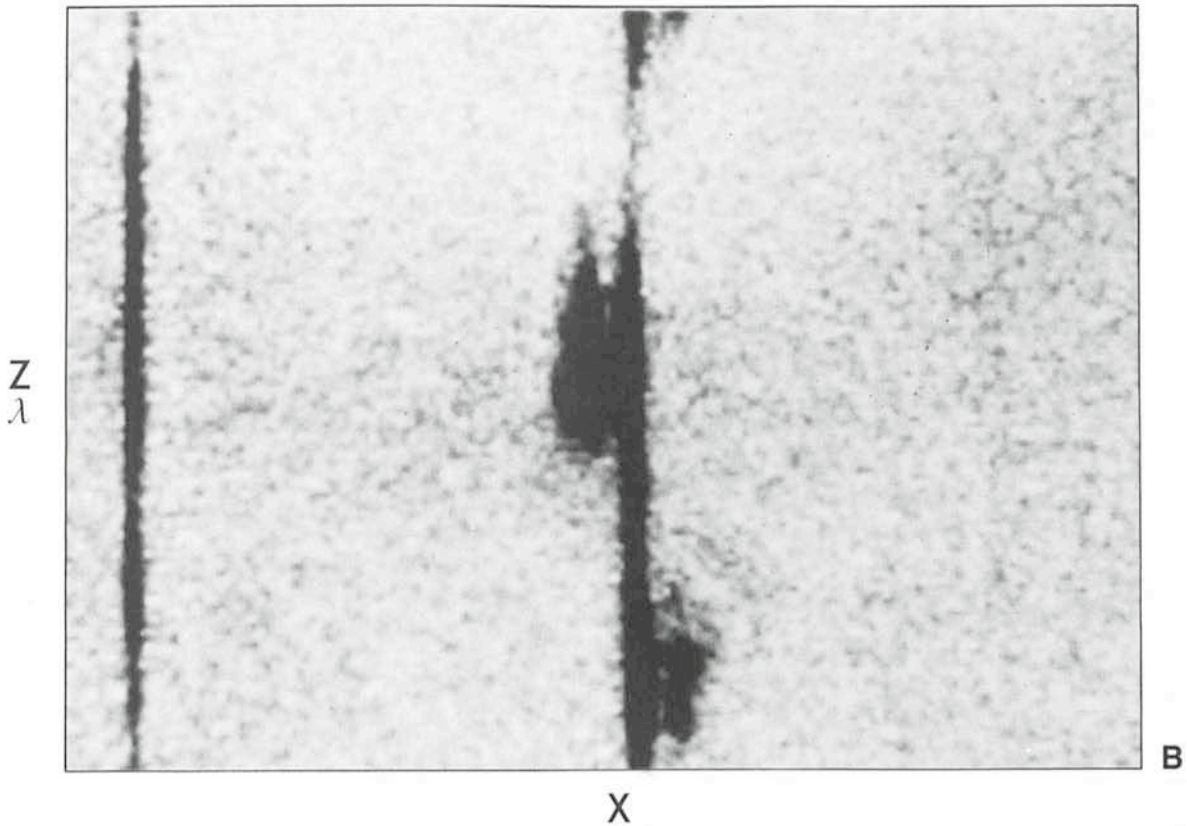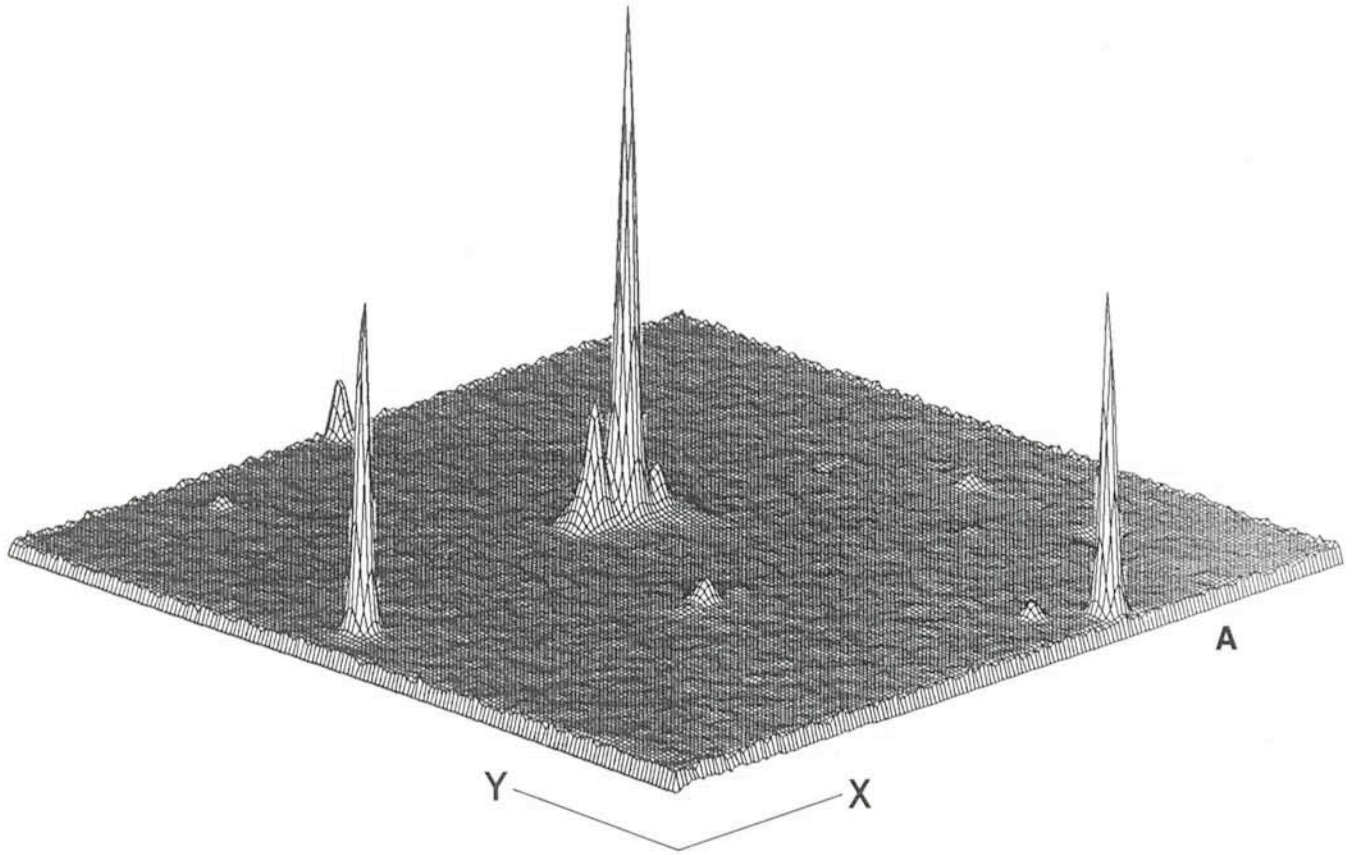
Fig. 3 A represents a wavelength compacted [O III]5007 image of the radio galaxy PKS 2158-38. This manner of displaying the data shows all of the [O III] emission at various velocities and as well gives an idea of the relative strengths as a function of position on the sky. The galaxy causes the triple peaked structure in the centre of the field. Other peaks in the field are caused by stars.

Fig. 3 B is an X-velocity plot (compacted in Y) similar to those described for previous figures. It shows the variation of velocity as a function of right ascension position, and one can note in particular the steep velocity gradient across the nucleus so characteristic of PKS 2158-38.