speckle interferometry and interferometry with multiple systems were extensively discussed together with the theoretical limitations of these techniques. Then the needs for high angular resolutions in all fields of astronomy from the solar system to the galaxies have been presented.

Good arguments have been given for both solutions, single and multiple apertures. Some lively discussions on this subject have shown that any decision would be premature.

The workshop proceedings will be published by ESO in a few weeks. *P. V.*

PERSONNEL MOVEMENTS

STAFF

Arrivals

Europe

FLEBUS, Carlo, I, Laboratory Technician, 1.5.1981
MÜLLER, Karel, DK, Administrative Assistant (Accounting), 1.5.1981
TANNE, Jean-François, F, Project Engineer in Astronomical Instrumentation, 1.7.1981
HUSTER, Gotthard, D, Designer-Draughtsman, 1.7.1981
MEYER, Manfred, D, Electronics Engineer, 1.10.1981
KRAUS, Hans-Jürgen, D, Driver/General Clerk, 1.7.1981
MALASSAGNE, Serge, F, Designer-Draughtsman, 1.8.1981
PONZ, José, E, Science Applications Programmer, 1.10.1981

Departures

Europe

SCHULTZ, Raimund, D, Driver/General Clerk, 15.5.1981
SCHABEL, Peter, A, Senior Electr. Engineer, 31.8.1981

ASSOCIATES

Departures

Europe

LINDBLAD, Per Olof, S, 31.8.1981

FELLOWS

Arrivals

Europe

BJÖRNSSON, Claes-Ingvar, S, 1.10.1981
GILLET, Denis, F, 1.10.1981
WOUTERLOOT, Jan, NL, 1.10.1981

Departures

Europe

PAKULL, Manfred, 31.5.1981

Photometric, Spectroscopic and IUE Observations of X-ray Binaries

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Introduction

X-ray binaries offer the unique opportunity to study the properties of neutron stars in some detail. In a recent article E. J. Zuiderwijk (THE MESSENGER No. 19, p. 18, 1970) discussed the "Standard Model" of X-ray binaries with massive components, demonstrating the difficulties in lightcurve analysis and mass determination. The model is relatively simple: a normal primary star, which can be observed in visual light, and a neutron star form a binary system. The most important constraint is given by the "Limiting Roche Lobe", a critical surface, which is confining the maximum possible radius of the primary star. The size of this lobe, in units of the separation of the two stars, is dependent only on their mass ratio. Thus the radius of the primary star gives a limiting value for the mass ratio.

It is assumed that the optical star is in bound rotation, which means that the rotational period of the star is identical with the orbital period of the binary system. Thus, the orientation of the star relatively to the axis connecting both components is constant, an assumption which seems quite plausible due to the strong tidal deformation in very close binary systems. If, however, the primary star shows unbound rotation, then the size of the limiting lobe is different from the normal case of bound rotation and as a consequence, a different value for the mass of the neutron star is possible.

Another problem is the mass transfer, which is necessary to make the binary star an X-ray binary. The kinetic energy of the gas falling onto the neutron star is converted into heat, at the surface of the neutron star a temperature of about 10^7K is reached, giving rise to strong X-ray emission. There are two possible mechanisms for the mass transfer: Either the primary star, due to its evolution, has expanded up to its limiting Roche lobe and the matter overflowing this lobe is falling on the neutron star, or the primary star loses mass due to a strong

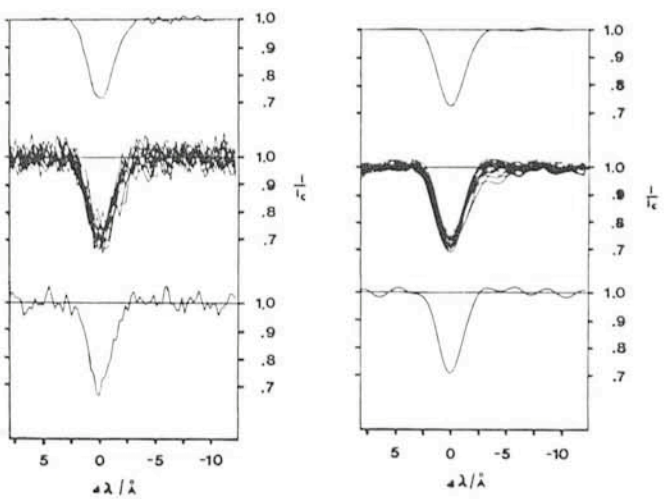

Fig. 1: *The He I 4026 Å line of Vela X-1. Left part: uncorrected line profile. Right part: Corrected for high frequency noise. Bottom: profile of a single line. Middle: profiles of all the 14 spectra used. Top: mean profile.*