The simplest explanation is that we have found a distant aggregate of galaxies, the radio source being the first ranked object. Its magnitude suggests a redshift of $z \geq 0.6$.

Clusters of galaxies have been found up to $z = 0.92$ (Gunn et al. 1986) and it has been suggested that some of the most distant 3CR galaxies, near $z \approx 1.8$ might be cluster cores in the process of formation (e.g. 3C 326.1, Mac Carthy et al. 1987; 3C 294, Spinrad et al. 1988).

The dynamical time of galaxy clusters is of the order of the Hubble time. It follows that clusters should be dynamically young and may have had different properties at $z \geq 1$. It is also by no way obvious that the universe contains many clusters at high redshift. Thus it would be important to have a spectrum of this object.

Several distant 3CR elongated galaxies have been found to have a complex, probably multiple structure (Le Fevre and Hammer, 1988). These authors have proposed that some of the 3CR distant galaxies might be affected by gravitational amplification or lensing by foreground galaxies, an hypothesis that may also apply to this new case.

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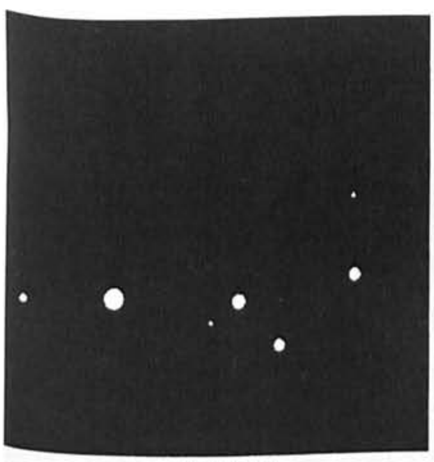
The Spectacular Binary System PG 1550+131

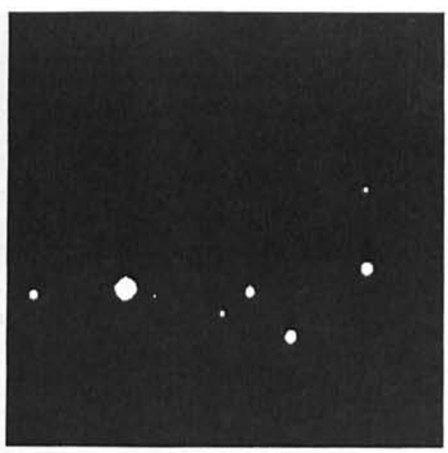
PG 1550+131 was known as a faint, very blue object (V = 16.8, U-B = −1.2) in the constellation Ophiuchus. Its optical spectrum showed the Balmer lines and the Balmer jump in emission. Scarce photometric data indicated large amplitude variations. So it seemed to be a relatively uninteresting member of the cataclysmic variables, not deserving further detailed observational attention. Nevertheless, it was included in a programme to search for eclipsing, faint cataclysmic variables and aiming at the determination of primary masses in such systems. The observations were performed using the CCD camera at the Danish 1.5-m telescope at La Silla. PG 1550+131 turned then out to be the most spectacular eclipsing system found during this survey.

On 1988 July 2 at about UT 0 : 28, after monitoring this object for approximately one hour, it suddenly disappeared almost completely from the frame and reappeared after some seven minutes, indicating the occurrence of a short, very deep eclipse. On-line reductions revealed a regular, sinusoidal variation of the brightness, quite different from that of common cataclysmic variables and it soon became clear that the next occultation would occur about three hours later. In fact, this following eclipse and another one during the next night could be observed at the expected time.

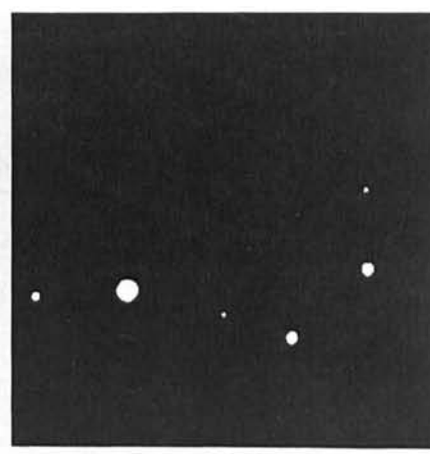
The photo shows a sequence of five CCD images covering the third eclipse monitored on 1988 July 3. At UT 1 : 20



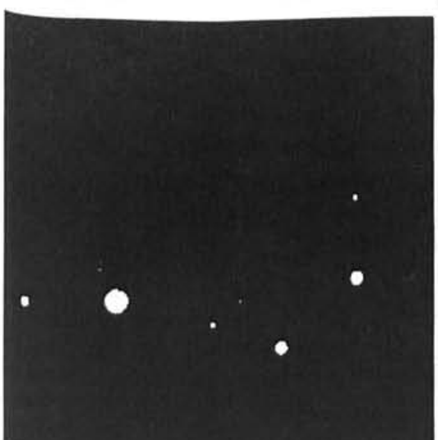
1:20 UT



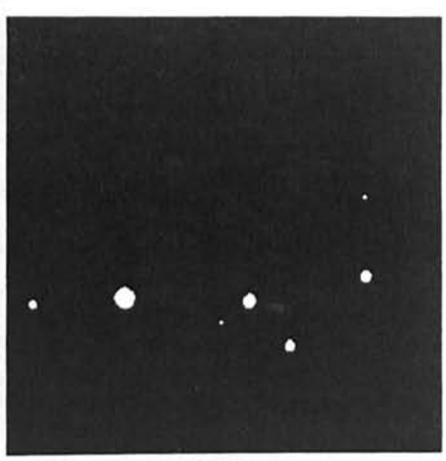
1:24 UT



1:28 UT



1:31 UT



1:35 UT

PG 1550+131

Eclipse on July 3, 1988

the eclipse has not yet begun; at 1 : 24 the bright star in the system has dimmed notably; at 1 : 28 it is completely eclipsed; it weakly reappears at 1 : 31 and reaches its normal brightness at 1 : 35. The exposure time was three minutes for all frames. The main spectral response is in the red region since no filter was used.

Folding the data with the (orbital) period of 187 minutes yielded a smooth, sine-shaped (full amplitude ~0.6 mag) light curve outside eclipse which occurs half a period after maximum light. Its depth is at least 4.8 mag and the time between first and last contact amounts to about 12 minutes. In fact it must be deeper and narrower since due to the relatively long integration time its true shape is not resolved. Thus PG 1550+131 exhibits eclipses which are among the deepest if not actually the deepest ever recorded for a binary. Two EFOSC spectra obtained near maximum respectively minimum light demonstrate that the Balmer emissions (indicatively superimposed on absorptions) disappear near minimum light, leaving the Balmer series in absorption.

These results show that PG 1550+131 is a precataclysmic rather than a cataclysmic binary. It consists of a small hot degenerate object (very probably a white dwarf with $T \approx$ 18,000 K) and a late main-sequence star ($T \approx$ 3,000 K) which does not yet completely fill its roche lobe to enable mass transfer to the compact object typical for cataclysmic binaries. The compact object is heating up the facing side of the companion to about 6,000 K, thus producing the sinusoidal shape of the light curve during orbital revolution. The heated hemisphere is also responsible for the emission lines which cannot be seen near the eclipse of the compact object.

Only very few eclipsing systems in this transitory phase are known so far which allow an accurate determination of the basic parameters that in turn place constraints on those for cataclysmic variables. A detailed study of PG 1550+131 may therefore contribute to our knowledge of both the precataclysmic as well as the cataclysmic states of binary evolution.

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Report on the Last Observing Run of Multiobject Spectroscopy: OPTOPUS is Alive and Kicking

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1. Fibre Multiobject Spectroscopy at ESO

The ESO fibre facility for multiobject spectroscopy at the Cassegrain focus of the 3.6-m telescope, OPTOPUS, has been operating since March 1985. A complete description of the system is given in the ESO Operating Manual No. 6. It is possible to observe with OPTOPUS a maximum of 52 objects distributed over a field of 33′. Special aperture plates are prepared in advance of the observations in the ESO workshop from accurate α and δ coordinates of the selected objects. These plates are eventually mounted at the telescope and the fibres are manually inserted in the apertures; at the other end they form the entrance slit of a CCD spectrograph. In the last four years OPTOPUS has been used in 33 nights for 14 different programmes. It has always operated with high reliability, collecting some 6,000 spectra. The limiting magnitudes at a resolving power of about 500 in the visual are about 18.5 for galaxies and 20 for quasars in a two-hour exposure. While these limits allow useful work for a large number of programmes, there are two aspects of the present system which must be considered as unsatisfactory: the poor blue-UV transmission of the fibres and the reduced efficiency of a number of them, mainly due to imperfect centring of the microlenses at their input ends. As the interest in using

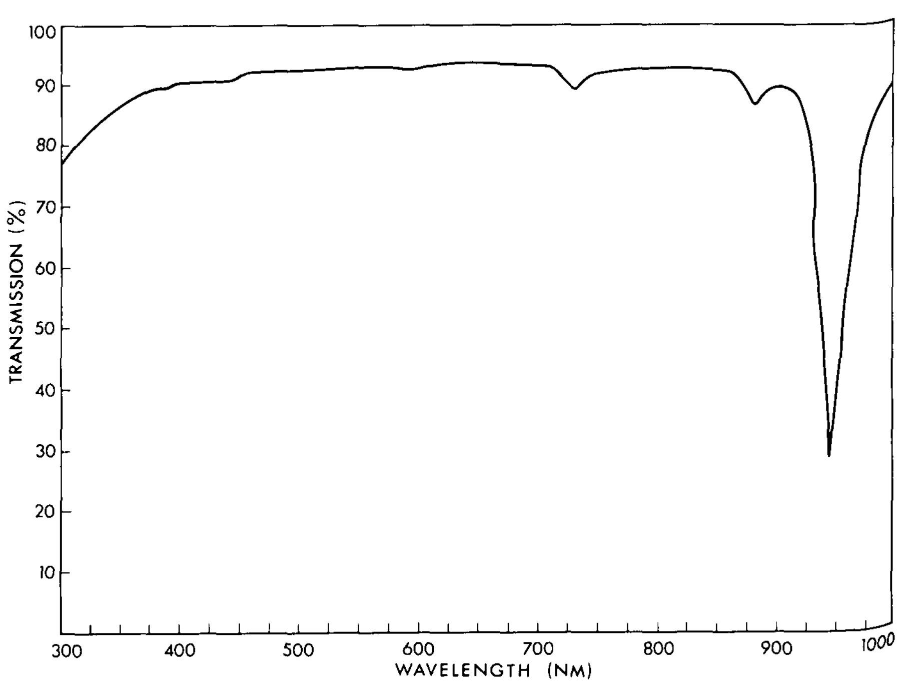

Figure 1: *Total transmission (including reflection losses) of a 3-m polymicro fibre used in the new OPTOPUS head.*