velocity difference $\Delta v^{rf}_{A-B} = -180 \pm 240$ km s^{-1}, and a median value $\Delta z_{A-B} = (+1.3 \pm 2.0) \times 10^{-3}$, or $\Delta v^{rf}_{A-B} = +160 \pm 240$ km s^{-1}. These very preliminary measurements are then consistent with a zero velocity difference between the components A and B, to within ~ 300 km s^{-1}. Additional data are needed in order to improve on this measurement.

The result of the division of the two spectra (B/A) is fairly constant in the blue part (3600–6400 Å), and a slight but significant increase in the red part (6400–8000 Å), which is equivalent to the slight difference in colour, noted above. It is possible to consider the apparent reddening of the component B as a contribution from a foreground galaxy which could be a part of the gravitational lens itself. We divided the spectrum of the component A by 100 (very close to the flux ratio from the division), and subtracted it from the spectrum of the component B. The resulting spectrum, shown in Figure 3, is reminiscent of an early-type galaxy spectrum at a redshift $z \sim 0.6$, if the continuum rise is attributed to the 4000 Å break (see Surdej et al. 1987 for a similar investigation). The rough R magnitude of this component is $\sim 23 \pm 0.5$ (about 7^m fainter than A and 2^m fainter than B), comparable to what is expected of a luminous elliptical galaxy at $z \simeq 0.6$ (Guiderdoni and Rocca-Volmerange 1987). The large number of other faint galaxies in the field is also consistent with the presence of a rich foreground cluster at that redshift. Finally, it is possible that the companion D (and perhaps even C) are other members of this hypothetical lensing cluster along the line of sight to UM 425. The brighter ($V \simeq 17.8$) galaxy just NW from UM 425 is at $z = 0.1265$, and probably unrelated to the system.

III. Conclusion

It is worth mentioning that it is a generic feature of gravitational lensing that the closer the component separation, the greater the similarity of their relative intensities, and vice versa. In the present case, because of the relatively large image separation (6.5 arcsec), a large difference in brightness is expected and observed (almost a factor of 100). Furthermore, in simple geometry model, the lensing galaxy is expected to be closer to the faint image B than to the bright image A. However, in the case of UM 425, the lensing potential is probably fairly complicated, and we postpone any modelling of the system to a future, more comprehensive paper.

The very similar spectra and colours, the presence of a possible lensing galaxy and/or a cluster, and the luminosity and redshift bias used to select the object in the first place, argue in favour of the gravitational lens hypothesis. It is regrettable that the system is not detected in the radio, as the comparison of the optical and radio images can be used as a powerful test for lens candidates (Djorgovski et al. 1987). Further data are needed in order to tighten the measurements presented here, and establish the nature of the components C and D.

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Binary Nuclei of Planetary Nebulae

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Introduction

About ten planetary nebulae have late-type central stars, which are too cool to ionize the nebula. This implies either the presence of a warmer companion (the true central star), or an unstable central star which was hotter in the past.

These two phenomena – binarity and intrinsic variability –, which are physically very different, may give rise to apparently very similar variations: same behavior for the radial velocity curve and/or for the light curve. In addition, in both cases, spectral peculiarities can be observed, such as stellar emission lines, which can be explained by chromospheric activity of the star or by mass exchange in a close binary system.

The true interpretation is possible only if coordinated observations are conducted.

Observations

At La Silla we used various tools:
- Radial velocity scanner CORAVEL mounted on the Danish 1.5-m telescope (observations taken by Prévot from Marseille):
- Differential photometer P7 of the Geneva Observatory mounted on the Swiss 70-cm telescope:
- Spectrograph B & C (CCD detector) mounted on the ESO 1.52-m telescope.

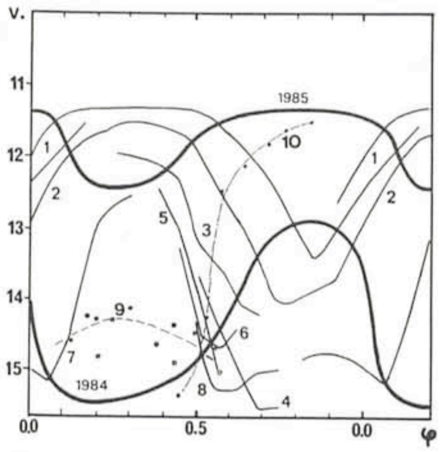

Figure 1: *Evolution of the light curve of NGC 2346 (central star). 1 to 8 are taken from Mendez et al. (1984). 1 = Kohoutek, 1982 Jan. – Feb.; 2 = Gathier, 1982 Mar. – Apr.; 3 = Claria, 1982 Nov.; 4, 5 = Van Driel, 1982 Dec.; 6 = Mendez, 1983 Jan.; 7, 8 = Kohoutek, 1983 Jan.; 9 = Kohoutek and Celnik, 1984 Feb.; 10 = Schaeffer, 1985 Feb. The two thicker lines correspond to our observations: 1984 Sept. – Oct.; 1985 Sept. (taken from* Astron. Astrophys. **160,** *L1–L3 (1986).*

Results

Since 1978 we have observed in particular four cold nuclei of planetary nebulae: FG Sagittae (spectral type K), LoTr5 (G5 star), NGC 2346 (A5 star) and Abell 35 (GB star). Here we report briefly on the two southern objects, NGC 2346 and Abell 35.

NGC 2346

According to Mendez et al. (1982), the central star is an SB1 and its photometric variations (detected in 1981) are due to the passage of a dust cloud in front of the binary system. Infrared observations of Roth et al. (1984) and IUE observations of Feibelman and Aller (1983) have allowed to confirm the dust cloud interpretation.

The optical observations of NGC 2346 during the eclipses, taken all together, were especially informative. The comparison (see Fig. 1) of our photometric observations Sept.–Oct. 1984, Sept. 1985) with the previous one have shown a phase difference, and new properties of the clumpy shell have been suggested (Acker and Jasniewicz, 1985: Jasniewicz and Acker, 1986). In particular the end of the eclipses has been suspected and confirmed in 1986.

Abell 35

Simultaneous spectroscopic and photometric observations of BD 22°3467, the GBIII central star of Abell 35, have been performed at La Silla, in order to elucidate the origin of the light variations and of the Hα emission stellar line shown by Jasniewicz and Acker (1988). Binarity is probably responsible for these variations: this assumption is confirmed by recent IUE observations reported by Grewing and Bianchi (1987).

We have conducted the following observations:

– 43 measurements have been done from February to April 1988 using the P7 differential photometer mounted on the Swiss telescope (mean probable error on the V magnitude 0.008):

– 48 spectra, taken with an exposure time of 25 minutes each, have been collected from 20 to 24 April 1988, using the spectrograph B & C + CCD, mounted on the ESO 1.52-m telescope. The dispersion was 58 Å/mm; all the spectra were centred around the Hα line; the final resolution was 1 pixel = 1.7 Å.

The spectra were reduced using the IHAP procedure. Preliminary results should be given (see Fig. 2).

The faint Hα emission line is double peaked and variable. The spectroscopic variations seem to occur within a range of 20 hours, and thus are in agreement with the photometric period P = 0.765 d. found by us in 1986 and 1987.

The hypothesis related to an accretion disk in a binary system will be

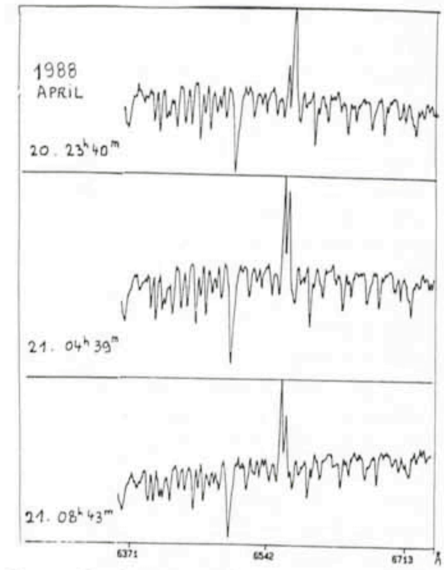

Figure 2: *Spectroscopic variations on the Hα line for the central star of Abell 35 (ESO 1.52-m telescope, B & C + CCD).*

tested and discussed after full processing of the data (to appear in *Astron. Astrophys.*).

For other cold nuclei, data were collected using the CORAVEL system; but the central stars of planetary nebulae are very faint objects, and the radial velocity variatons we detected in three cases must be confirmed by new series of observations.

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Brey 73: a Multiple Wolf-Rayet Star

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1. Introduction

Detailed observations of several of the most luminous stars in the LMC show that these stars often are multiple systems (Walborn, 1977; Feitzinger et al., 1980; Prevot-Burnichon et al., 1981; Lortet et al., 1986). Most of these stars really are tight clusters where different types of stars are mixed. Moreover, very accurate observations of R 136 by speckle interferometry (Weigelt and Baier, 1985) and of Sk –6641 under very good seeing (Heydari-Malayeri et al., 1988) have revealed eight and six components respectively in a field of about 4 × 4 $arcsec^2$. The existence of supermassive stars in the LMC is now ruled out, and we must interpret extragalactic young stellar associations very cautiously.

Therefore, being interested in the