

## 61 cm Bochum Telescope

Oct. 1982:	Sterken Group.
Nov. 1982:	Sterken Group.
Dec. 1982:	Sterken Group.
Jan. 1983:	Kohoutek, Sterken Group, Kohoutek, Pauls/Kohoutek, Sterken Group.
Feb. 1983:	Sterken Group.

## PERSONNEL MOVEMENTS

### STAFF

#### Arrivals

##### Europe

KERK, Elizabeth (NL), Administrative Assistant (Personnel), 1. 9. 1982

STOFFER, Christina (CH), Secretary/Typist (Scientific Division), 1. 11. 1982

##### Chile

GILLIOTTE, Alain (F) Optical Technician (TRS), 13. 9. 1982

#### Departures

##### Europe

BUCHER, Beate (D), Secretary (Personnel), 30. 9. 1982

VERSCHUREN, Rita (B), Secretary (Scientific Division), 17. 9. 1982

##### Chile

SCHNUR, Gerhard (D), Astronomer 30. 9. 1982

LE SAUX, Paul (F), Systems Analyst/Programmer (TRS), 31. 10. 1982

## FELLOWS

### Arrivals

#### Europe

RICHTER, Otto-Georg (D), 1. 9. 1982

BANDIERA, Rino (I), 1. 10. 1982

OLIVA, Ernesto (I), 1. 10. 1982

### Departures

FERLET, Roger (F), 30. 9. 1982

## ASSOCIATES

### Arrivals

#### Europe

FREDRICK, Laurence (USA), 6. 7. 1982

CHEN, Jian Sheng (Chinese), 12. 7. 1982

CHOUDRY, Amar (USA), 1. 9. 1982

LUCY, Leon (UK), 1. 9. 1982

SALVATI, Marco (I), 1. 11. 1982

### Departures

#### Europe

MILLER, Richard (USA), 30. 9. 1982

# Observations of Bipolar and Compact H II Regions

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Several investigations carried out during the last years at the Max Planck Institute for Astronomy in Heidelberg have dealt with the bipolar compact H II region S 106. The essential structural features of this object are: (i) There is only a single exciting star in the centre of the nebula, (ii) this star is surrounded by a disk of dust that we are seeing edge on. This disk of dust divides the nebula into two "lobes". It causes a visual extinction of the central star of about 20 magnitudes, for which reason it can be photographed only at infrared wavelengths (Eiroa, C., Elsässer, H., and Lahulla, J. F. 1979, *Astronomy and Astrophysics* **74**, 89), whereas the light of the central star can get through the disk in the perpendicular direction. A digitized near infrared photograph of S 106 taken by Elsässer and Birkle with the 1.23 m telescope of Calar Alto is shown in Fig. 1.

S 106 is associated with a massive molecular cloud containing OH and H<sub>2</sub>O masers. From spectroscopic observations Solf (1980, *Astronomy and Astrophysics* **92**, 51) has shown that the ionized gas is flowing radially toward the polar lobes at supersonic speed. The kinematic age is about  $5 \cdot 10^3$  yr. These observations and the structural properties support the idea that S 106 is an H II region in a very early stage of evolution excited by a star recently formed out of a disk-shaped cloud which is probably rotating around an axis perpendicular to it.

Among the H II regions compiled in the Sharpless catalogue there is no other object of the same kind. Only a few objects show some similarity to S 106, for example S 269 and S 270. The distance to S 106 is about 500 pc, and its angular diameter is approximately 2 arcmin; consequently more distant objects of comparable linear size are too small for recognition in available H II catalogues. In order to get—if possible—a more extensive sample of similar objects H. J. Staude and I have carefully searched the Palomar atlas for bipolar and related objects. Since the typical appearance of a bipolar nebula is found only if we are looking edge on onto the disk of dust, "monopolar" nebulae may also be bipolar. The best example is the R Monocerotis nebula, which looks like the southern lobe of S 106. Cantó, Rodríguez, Barral and Carral (1981, *Astrophysical Journal* **244**, 102) have shown that this nebula is bipolar, and that the second lobe is optically obscured by the disk of dust.

At present we have compiled a list of 40 possible bipolar nebulae found on the Palomar atlas. Some of them are very likely genuine bipolar nebulae. Others resemble the R Monocerotis nebula, probably they are halves of bipolar nebulae. During the last 3 years we have carried out several observing programmes in order to get information concerning the nature of these objects. We will now consider the first results for three of them shown in