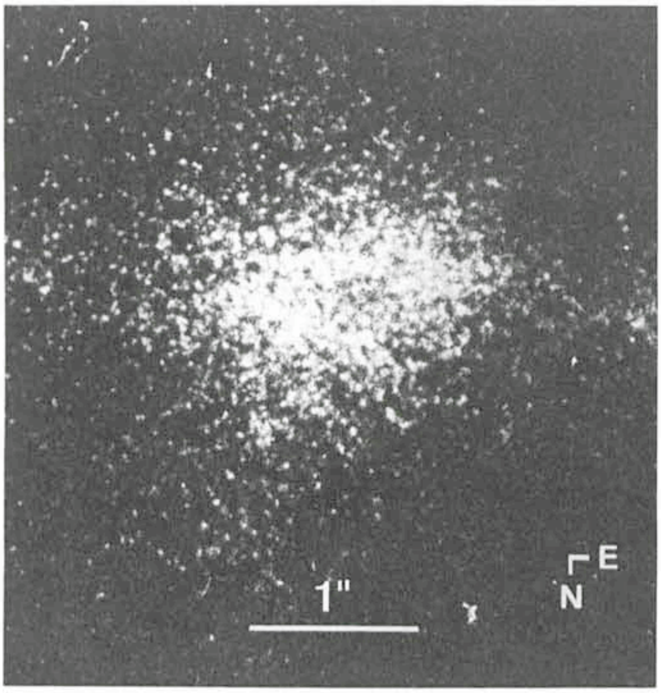

Fig. 6: *Speckle interferogram of HD 97950 AB.*

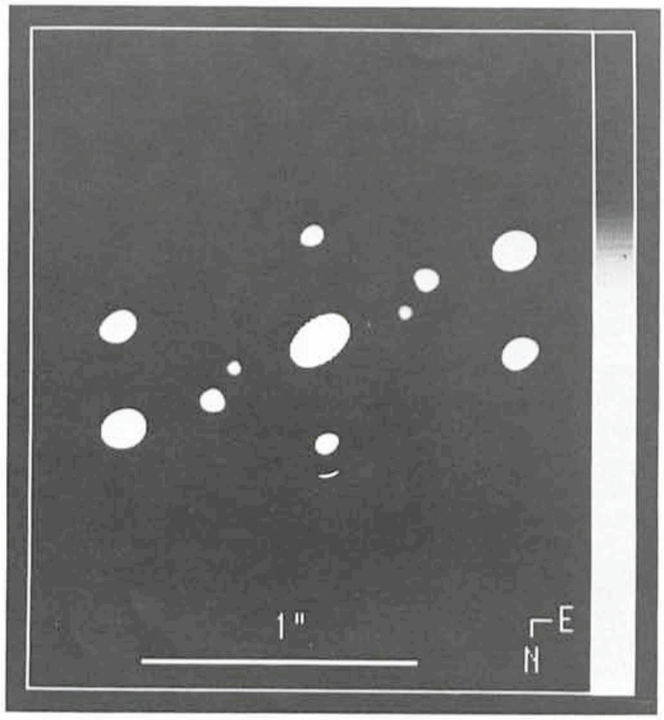

Fig. 7: *High-resolution autocorrelation of HD 97950 A1–A2–A3–B. The three dots on the extreme left are a diffraction-limited image of HD 97950 A1–A2–A3.*

ness of such reference stars has been discussed by Liu and Lohmann (1973) and Weigelt (1978) in more detail.

Fig. 5 shows the autocorrelation of R136 a1–a2–a3 reconstructed from 4,000 speckle interferograms recorded with the 2.2 m telescope (filter $\lambda_0 = 610\,nm/\Delta\lambda = 120\,nm$). This autocorrelation has higher resolution than the 1.5 m autocorrelation. Therefore the a1–a2 image (= off-axis double peak) is better resolved. More details about our R136a observations are described in a paper submitted to *Astronomy and Astrophysics* (Weigelt and Baier, 1985).

Figs. 6 and 7 show one speckle interferogram and the high-resolution autocorrelation of HD 97950 AB in the giant H II region NGC 3603. We have investigated this object since it has been discussed in various papers that it may be of similar nature as R136a (Moffat and Seggewiss, 1984). The autocorrelation shows that HD 97950 AB is a star cluster consisting of 4 stars. We found that the component A is a triple star and B is a single star (see Baier et al., 1985 for more details). Since B is a single star, the three peaks on the extreme left of the autocorrelation are a true image of HD 97950 A1–A2–A3.

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Access to IRAS Data in ESO Member Countries

Several of the official IRAS products have now been released to the general astronomical community, others will follow in the near future.

Already released are:

- Point Source Catalog, containing 250,000 point sources detected in at least one of the IRAS bands (12, 25, 60 and 100 μ).
  Print, microfiche and tape versions (2 tapes, 1,600 BPI).
- Working Survey Data Base, containing the observation history of objects in the point source catalog. Print and tape versions (2 tapes, 6,250 BPI).
- Skyflux Maps, in 16° × 16° overlapping fields in each of the IRAS bands. These maps are preliminary, as they are based only on the third and last IRAS sky coverage (HCON3).
  Photographic and tape versions (188 images and 20 tapes, 6,250 BPI).
- Catalog of Low Resolution ($\lambda/\Delta\lambda$ = 20) Spectra of ≈ 5,000 sources (LRS Catalog), mainly late-type stars. Tape versions only; print version will appear in *A & A Supplements* in 1985 (1 tape, 1,600 BPI).

Soon to be released will be:

- Catalog of variable sources.
- Skyflux maps containing data from all IRAS sky coverages (HCON's 1, 2 and 3 [revised]).

- Catalog of Small Extended Sources.

Several other, more primitive products, various IRAS databases, including the LRS database, and large-scale maps (Spline I, Spline II) will remain at the designated IRAS Centers.

These Centers are:

Netherlands: Leiden, Groningen, and Amsterdam Astronomical Institutes;

UK: Rutherford Appleton Labs, Chilton;

USA: SDAS Center, now at JPL, Pasadena, to be moved to Caltech summer 1985.

All three Dutch data centers possess the officially released products as well as additional handling software. There is some specialization, however:

Amsterdam
Pannekoek Institute: All official products plus Astronomical Catalogs for cross-referencing with IRAS PS catalog.

Groningen
Ruimteonderzoek: All official products plus CPC Spline I, II Database, Survey Database (PASS), Colour Display (AO Deep Sky Grids).

Leiden
Sterrewacht: All official products plus LRS Database. (Spline I, II) Survey Database (CCDD), Plate Scanning Device plus software, Colour Display, AO Deep Sky Grids.

All *officially* released products will also reside at the Stellar Data Centre, Strasbourg.

European astronomers wishing to make use of IRAS data are kindly requested to take note of the following:

- Copies of IRAS official products as mentioned above should be requested from the Stellar Data Center, Centre de Données Stellaires, Observatoire de Strasbourg, 11, Rue de l'Université, F-67000 Strasbourg. Dutch centers will not, as a rule, supply copies; requests will be passed on to Strasbourg.
- Under certain conditions, European astronomers will have access to databases and software (not officially released) at one ot the Dutch data centers.
  Due to manpower restrictions, only limited service is available, so that prospective users will generally be required to come to the Netherlands in person.
- Small programs will entail a stay in the Netherlands varying from a minimum of two days to one or two weeks. Manuals and advising personnel are available for this type of program.
- Larger programs, making extensive use of IRAS products, databases and software, will require a longer stay and more extensive interaction with Dutch staff, possibly in the form of a full collaboration.
- Prospective European users of the Dutch facilities are in all cases requested to contact:

  Chairman Dutch IRAS Steering Group
  Dr. H. J. Habing
  Sterrewacht Leiden
  Wassenaarseweg 78
  2300 RA Leiden

Nova-like Objects and Dwarf Novae During Outburst – A Comparative Study

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General Remarks on Cataclysmic Variables

The Model

Novae, recurrent novae, dwarf novae and nova-like objects form subgroups of a class of objects well known as cataclysmic variables. Detailed photometric and spectroscopic work during the past thirty years has shown that all of them are interacting double stars. The primary component represents a massive white dwarf—the mass average lies at about one solar mass, and much of the observed dispersion is due to uncertainties in the reduction procedures—in contrast with field white dwarfs which possess an average mass at about 0.65 solar masses (Weidemann, 1968). The secondary component comprises a late-type main-sequence dwarf with spectral type K to M which fills its critical Roche volume, and spilling hydrogen-rich material via the Lagrangian point L1 to the highly evolved primary. Due to conservation of angular momentum the mass stream does not immediately impact the primary but leads to the formation of a quasi-stable accretion disk. At the impact zone of transferred material and particles in the outer disk region, an area of shocked gas—the so-called hot spot—is produced. By exchange of angular momentum, disk material spirals slowly inward, and is finally accreted onto the primary component. In fact, it is this interplay of mass transfer and accretion processes which is responsible for most of the peculiar behaviour observed in this class of objects.

The Outburst Activity

The principal difference between cataclysmic variables is linked with their outburst activity. Novae reveal less frequent outbursts with a quiescent phase of about 10^4 to 10^5 years between explosions, while recurrent novae erupt on the average between 10 and a few hundred years. The outburst amplitude is 7^m to 14^m, and the mean energy radiated per single eruption amounts to $\leq 10^{45}$ ergs. It is now well established that the nova explosions result from unstable thermonuclear burning of hydrogen-rich material, accreted and accumulated onto the surface of the otherwise hydrogen-exhausted white dwarf. The dwarf nova eruptions occur more frequently in intervals between 10 days and several years, their amplitudes range between 2^m to 6^m and the total energy released per outburst is of the order of 10^{38} to 10^{39} ergs. Due to recent theoretical models (Papaloizou et al., 1983) recurrent instabilities in the accretion disk itself—caused by different viscosity values—are responsible for the explosions. At low density the viscosity is low, and the material is stored in a ring. As soon as the density in this ring reaches a critical value, the viscosity increases rapidly and the ring expands into a disk with a great portion of its mass accreting onto the white dwarf. This conversion of gravitational potential energy of the ring into radiation causes the observed dwarf nova outburst. According to their outburst behaviour, the dwarf novae are subdivided into U Gem, Z Cam and SU UMa-type stars. U Gem-type stars exhibit typical dwarf nova eruptions: the rise to maximum brightness takes a shorter time than the recovery from maximum to quiescence. On the average an eruption lasts for several days. Z Cam-type stars are characterized by a brightness "standstill": after a regular outburst it sometimes happens that the brightness remains about one magnitude below peak brightness for an indefinite period of time (it can last hours to even years). SU UMa-type stars undergo, besides regular outbursts, additional superoutbursts which show a larger outburst amplitude (up to several magnitudes), and