

Detection of the Diffuse IS Band at λ 5780 Å in the Large Magellanic Cloud

The band at λ 5780 Å is one of the 39 diffuse IS absorptions in the region λ 4400–6850 Å which are generally correlated with the colour excess $E(B-V)$ (Herbig, *Astrophysical Journal*, **196**, 129, 1975), and whose origin is still unknown. G. Vladilo (Osservatorio Astronomico di Trieste, Italy) took an exposure of $1^{\text{h}}15^{\text{m}}$ of SN 1987 A in the spectral range around λ 5780 Å, with the CAT+CES+Reticon and a resolving power of 100,000. In Figure 1 one can see an expanded detail of the resulting calibrated spectrum. It is clear that two features have been detected: one close to the rest wavelength, which is interpreted of galactic origin, and the other displaced by a radial velocity of +261 km/s, i.e., in good agreement with neutral gas components previously detected in the LMC (de Boer, Fitzpatrick, and Savage, *M.N.R.A.S.*, **217**, 126, 1985). This is the first extragalactic de-

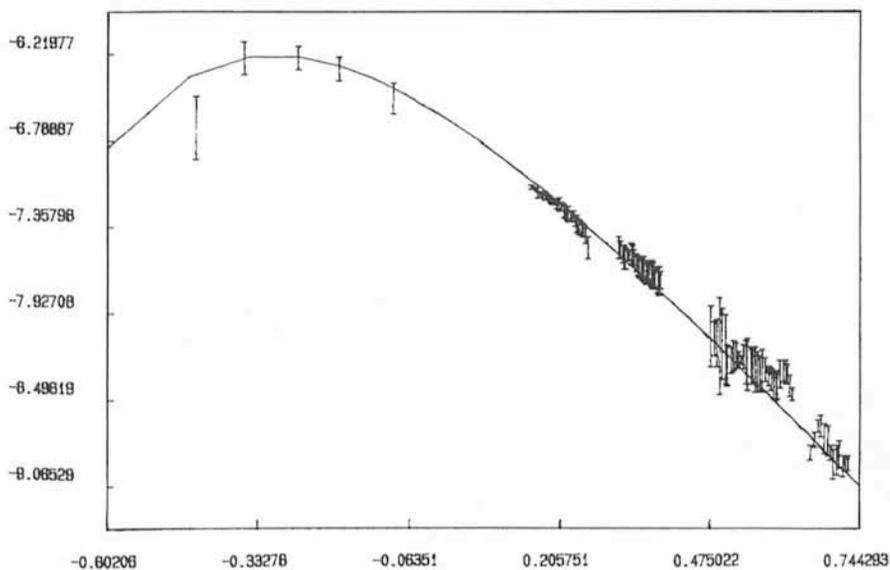


Figure 1: The 5780 Å feature, as observed in the spectrum of supernova 1987 A. Note that the ordinate interval is less than 4% of the continuum intensity.

tection of the λ 5780 Å band. The central depths of the galactic and LMC components, once normalized to the continuum, are 0.023 and 0.018 respec-

tively, that is about one order of magnitude weaker than the typical values found by Herbig (1975) in his survey of galactic lines of sight. G. Vladilo (Trieste)

The Temperature of 1987 A



Visible photometry and infrared CVF scans. Data were collected on the night between February 28 and March 1, 1987, with the standard photometer attached at the ESO 50-cm in the broad Johnson bands UBVRl, and with the INSB detector at the 1-m telescope for the infrared, at La Silla. IR data have been collected by P. Bouchet and R. Stanga. The continuous line is the fit of a black body with a temperature $T = 5900$ K. Vertical axis: $\text{Log}(\text{flux density (ergs cm}^{-2} \text{ s}^{-1} \mu\text{m}^{-2}))$. Horizontal axis: $\text{Log}(\lambda, \mu\text{m})$.

Fast Photometry of 1987 A

Fast photometry of the SN 1987 A has been carried out with the 1-m and the GMS 0.28-m telescopes at La Silla.

The 1-m telescope was equipped with the multi-channel photometer of the Universitäts-Sternwarte München. UBVRl data were obtained, observing sky and comparison star in two channels simultaneously with the object. Two photometric data sequences

were obtained with time resolution of 0.5 sec and 40 millisecond respectively. Figure 1 shows a condensed version of the data plotted in bins of 8 seconds. The U-B decrease is due to the U fading of the supernova. B-V and V-R are almost constant during the night. The irregular variability in V-I is due to the I band and is probably caused by fluctuations of the comparison star. A preliminary

analysis does not reveal significant periodic or non-periodic variations on short timescales. The 3 sigma level for the detection of periodic variations was 0.0004 relative amplitude.

The system at the GMS telescope is normally used for monitoring gamma-ray bursters and has been described by Bouchet and Gutierrez (*Messenger*, **45**, 32). Thanks to the frantic work of J. Alonso and F. Gutierrez, it was possible to adapt it for monitoring the SN 1987 A on every clear night since the discovery, with a time resolution of 10 millisecond and 1 millisecond in the Johnson V band and in white light. It has not been possible to detect any periodical fluctuation in the frequency interval between 0.0003 and

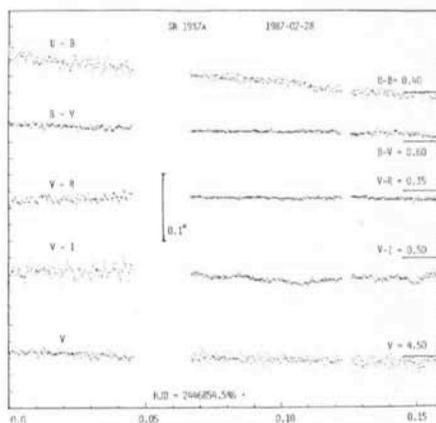


Figure 1: Condensed UBVRl (Kron-Cousins) light curves of the SN 1987 A, obtained on February 28. Each dot corresponds to an integration time of 8 seconds.