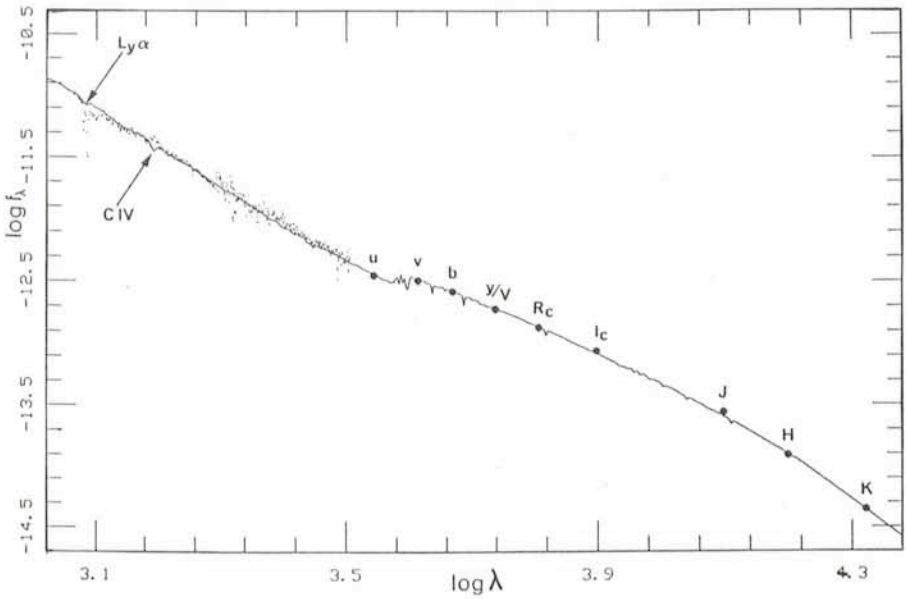

Figure 2: *Absolute flux distribution of CPD – 71°172AB from Lyman alpha to the Johnson K band (2.2 μm) expressed in erg (cm² s Å)⁻¹ versus the wavelength in Å units. Strömgren uvby, Cousins $R_c I_c$ and Johnson JHK fluxes are displayed by large filled dots. Small dots in the UV range represent the observations with IUE.*

range, following the method of Heber et al. (1984) and Heber (1986) though presently only LTE models were available. It provided a low estimate of the effective temperature $T_{eff} \sim 50{,}000°$ K for the hot star, from which were derived its intrinsic optical colours; some iterations were necessary to adjust the V magnitudes and the reddening so that all colours of the primary would be those of an early F star. The adopted solution was the following:

Star	CPD −71° 172A	CPD −71° 172B
Spectral type	F 3–4 IV	SdOB
y or V	10.99	12.05
b–y	0.265	− 0.155
m_1	0.161	0.060
C_1	0.643	− 0.210
U–B	0.019	− 1.210
B–V	0.403	− 0.327
$V–R_c$	0.240	− 0.16
$V–I_c$	0.481	− 0.32
V–J	0.77	− 0.74
V–H	0.96	− 0.91
V–K	1.01	− 0.97

The visual absolute magnitudes of both stars were derived from the adopted spectral type and colours of the F component, using the Tables of Crawford (1975) and of FitzGerald (1970) to estimate its degree of evolution; the inferred intrinsic parameters were checked by means of the Barnes-Evans (1978) relation. We determined in that way:

Star	M_v	T_{eff}	BC	Log ($L/L_\odot$)	$R/R_\odot$	log g
CPD −71° 172A	1.80	6,700	−0.10	1.15	2.80	3.7
CPD −71° 172B	2.86	55,000	−4.80	2.70	0.24	5.4

Figure 2 shows the fit of the sum of the Kurucz models adopted for each component to the IUE and visible observed composite colours. As it can be seen, the overall agreement between models and observations is quite satisfactory. A subsequent check using the R index of Schonberner and Drilling (1984) yielded $T_{eff} \sim 50{,}000$ to $60{,}000°$ K.

We have compared CPD −71° 172 B to two well-known subdwarfs:

(1) BD 75° 325 is a field sdO with $T_{eff} \sim 50{,}000°$ K, log g ~ 5.3, helium rich after Kudritzki et al. (1980). The short wavelength IUE spectra of both stars have revealed comparable ionization and excitation temperatures; the He II line at 164 nm is much stronger in the spectrum of BD 75° 325, suggesting that helium is moderately to fairly depleted in CPD −71° 172 B. The abundance of nitrogen is roughly normal while silicon and carbon are depleted like helium.

(2) The ultraviolet spectrum of LS II + 18° 9, which is a helium normal star with $T_{eff} \sim 60{,}000°$ K, confirms both the normal abundance of nitrogen and the slight depletion of helium in the photosphere of CPD −71° 172 B. In case where these results would be confirmed by the analysis of IUE high resolution observations, this newly discovered subdwarf would be one of the first helium poor sdO's with $T_{eff} > 40{,}000°$K.

So far, 14 other potential candidates have been identified and spectrographic observations recently performed at ESO have revealed seven objects of various natures, for which a long-term general survey including multicolour photometry, radial velocity measurements and IUE observations is in progress.

Tentative Time-table of Council Sessions and Committee Meetings in 1987

October 6	Council in Paris
November 17	Scientific Technical Committee
November 19–20	Finance Committee
Nov. 30–Dec. 1	Observing Programmes Committee
December 7	Committee of Council
December 8	Council

All meetings will take place in Garching unless stated otherwise.

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506. V. Castellani and M.L. Quarta: The Oosterhoff Dichotomy Revisited. I. The Ranking of RR Lyrae Periods Versus Metallicity. *Astronomy and Astrophysics.* June 1987.
507. L.B. Lucy and M. Perinotto: Models for the Wind of the Central Star of NGC 6543. *Astronomy and Astrophysics.* June 1987.
508. A.F.M. Moorwood: IRSPEC: Design, Performance and First Scientific Results. Invited paper presented at the Workshop on "Ground-Based Astronomical Observations with Infrared Array Detectors", University of Hawaii at Hilo, March 1987. June 1987.
509. A. Renzini: Some Embarrassments in Current Treatments of Convective Overshooting. *Astronomy and Astrophysics.* June 1987.
510. P. Crane, A. Stockton and W.C. Saslaw: The Optical Spectral Index in the South Radio Lobe of 3C 33. *Astronomy and Astrophysics.* June 1987.

511. N. Epchtein et al.: Valinhos 2.2 Micron Survey of the Southern Galactic Plane. II. Near-Infrared Photometry, IRAS Identifications and Nature of the Sources. *Astronomy and Astrophysics.* June 1987.
512. M. Azzopardi, J. Lequeux and A. Maeder: The Number of Wolf-Rayet Stars in Local Group Galaxies. *Astronomy and Astrophysics.* June 1987.
513. M. Pierre and M. Azzopardi: Young Stellar Content of Nearby Galaxies. I. NGC 300. *Astronomy and Astrophysics.* June 1987.
514. A.F.M. Moorwood, M.-P. Véron-Cetty and I.S. Glass: Optical and Near-Infrared Observations of IRAS Galaxies. II. *Astronomy and Astrophysics.* July 1987.
515. F. Matteucci and A. Tornambè: Chemical Evolution of Elliptical Galaxies. *Astronomy and Astrophysics.* July 1987.
516. A.F.M. Moorwood, E. Oliva and I.J. Danziger: Infrared Spectroscopy of Supernova Remnants. Paper presented at IAU Colloquium No. 101, "The Interaction of Supernova Remnants with the Interstellar Medium", 8–12 June 1987, Penticon, Canada. July 1987.
517. G. Contopoulos: Escapes from Stellar Systems. Contribution to the Proceedings of IAU Colloquium No. 97. July 1987.
518. H. Dekker, S. D'Odorico and R. Arsenault: First Results with a Transmission Echelle Grating in EFOSC. *Astronomy and Astrophysics.* July 1987.
519. E.J. Wampler and W.L. Burke: Cosmological Models with Non-Zero Lambda. Paper presented at a Symposium celebrating the 60th birthday of Halton C. Arp, "New Ideas in Astronomy". July 1987.
520. D. Baade: From Low-Noise Observations to High-Quality Data. Invited talk at 27th Liège Astronomy Colloquium "Astronomy with High-Precision Data", June 1987, Liège. July 1987.
521. M. Heydri-Malayeri, T. Le Bertre and P. Magain: The SMC Compact Blob N 81: a Detailed Multi-Wavelength Investigation. *Astronomy and Astrophysics.* August 1987.
522. D. Lorenzetti et al.: Infrared Monitoring of Halley's Comet. *Astronomy and Astrophysics.* August 1987.
523. A. Tornambè et al.: Binary Systems as Supernova Progenitors (Some Frequency Estimates). Invited paper at the 4th Workshop on "Nuclear Astrophysics" of the Max-Planck-Institut für Astrophysik at the Ringberg Castle, Tegernsee, April 21–24, 1987. August 1987.
524. M. Rodríguez-Espinosa. R.M. Stanga and A.F.M. Moorwood: Near-Infrared Photometry of High Redshift Quasars. *Astronomy and Astrophysics.* August 1987.
525. M. Rosa and O.-G. Richter: On the Progenitors of Type II Supernovae in M 83. *Astronomy and Astrophysics.* August 1987.
526. G. Meylan and S. Djorgovski: A Preliminary Survey of Collapsed Cores in Magellanic Clouds Globular Clusters. *Astronomy and Astrophysics.* August 1987.
527. T. Le Bertre: Optical and Infrared Observations of the Carbon Mira R For. Dust Shell Modelling as a Function of Phase. *Astronomy and Astrophysics.* August 1987.
528. Studies of Dynamical Properties of Globular Clusters. IV. Detailed Structure of 47 Tucanae. *Astronomy and Astrophysics.* August 1987.

Luminous MS Stars in the LMC

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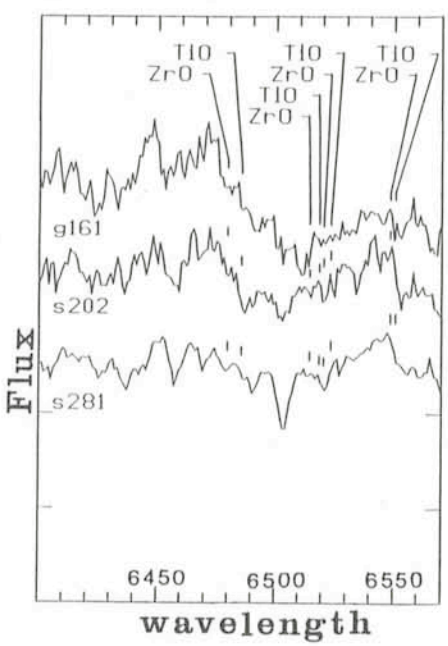
IDS spectra of a sample of stars selected from the M supergiant and M giant catalogue of Westerlund et al. (1981) have been obtained with the 3.6-m and 1.5-m telescopes. The sample covers the luminosity range from M(bol) = −9 down to M(bol) = −4. The most luminous stars are massive supergiants, while the less luminous ones are asymptotic giant branch (AGB) stars.

AGB stars are known to dredge up processed material to the surface. This produces carbon stars from oxygen-rich (M-type) stars. If the amount of material mixed to the surface is not large enough to transform the star into a carbon star, then the star becomes an MS, S or SC star. The spectral sequence M, MS, S, SC and C is an abundance sequence measuring the carbon-to-oxygen ratio. Thus MS stars have experienced some mixing and have a modified C/O ratio while M stars have not. For further details, the reader is referred to Iben and Renzini (1983) and references therein.

The MS and S classification is based on the strength of the ZrO bands, the strongest at 6473 Å. On the classification system of Keenan and Boeshaar (1980) the class MS is reserved for stars which have only slightly enhanced ZrO bands. Stars with stronger ZrO bands are called S-type. Abundance classes for S-type stars are determined from ZrO to TiO band-strength ratios.

When analysing the IDS spectra, particular attention was given to the strength of the ZrO bands. A number of S-type stars were easily found. To detect weaker enhancements in an unambiguous way, the strengths of the bands were measured by integrating the spectra in well-defined windows. Stars with luminosities around M(bol) = −6 and with types later later than around M2 were found to have slightly stronger 6473 (ZrO) features than more luminous M supergiants. Classification criteria used by Lloyd Evans (1983) indicate that this enhancement is enough to classify them as MS stars. Figure 1 shows spectra of three stars in the region of the 6473 band. The stars are from bottom to top: an M supergiant with M(bol) = −7.9, an MS star with M(bol) = −6.3 and an S star with M(bol) = −4.8. The strengths of the ZrO bands are seen to be stronger in the MS star than in the M star and, of course, much stronger in the S star. The stars are fairly close in temperature type.

In order to certify the MS classification, a number of classification standards of types M, MS and S were observed with the RETICON on the 1.5-m telescope in December 1986. The spectra cover the region from 5000 Å to 10000 Å. The dispersion is 228 Å/mm. The preliminary analysis of these spectra indicates that a few stars with 6473 features like the luminous MS stars in the LMC are found among the M-type classification standards. Thus, either the luminous MS stars are M-type or the M-type standards are actually type MS. Since MS and S-type stars frequently have a history of having once been



IDS spectra of LMC stars of spectral types M3 (bottom), M3S (middle) and S3/3 (top). The spectra are normalized to the same flux and the zero-points marked. The position of some TiO and ZrO features are indicated.