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Subject: [amastro] Positions for 30 Dor=R136 stars in the LMC
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The recent blush of media interest in the R136 stars in the Tarantula Nebula sparked me into action to find precise positions for its components.

The R136 cluster has an incredibly high number of very luminous stars packed into a tiny patch of sky. Thanks to Brian Skiff three lists of stars (reduced or re-reduced from CCD imagery) are available for this region, and have all been used in my study. They are:

- 1) 1993AJ....106..560P Parker J.W. Code : [P93]
<ftp://ftp.lowell.edu/pub/bas/starcats/parker.30dor>
- 2) 1998ApJ...493..180M Massey P. and Hunter D.A. Code: MH
<ftp://ftp.lowell.edu/pub/bas/starcats/mh98.30dor>
- 3) 1999A&A...341...98S Selman F., Melnick J., Bosch G., Terlevich R. Code:S
<ftp://ftp.lowell.edu/pub/bas/starcats/selman.dat>

A clear chart of the inner region of R136 appears in Breysacher, Azzopardi and Testor (1999), and their id. numbers are used in my table as BAT99-NNN. Of course their catalogue lists only Pop. I Wolf-Rayet stars in the LMC. Wergeilt, Albrecht and Barbieri (1991) published images of R136 and the numbering of components from 1 to 8.

By enlarging the BAT chart and matching it precisely to a plot of stars from the above catalogues, I determined which ones are an *exact* match. These selected stars defined my reference frame, enabling me to weed out spurious catalogue entries. On the other hand some relatively prominent cluster stars could not be found in any catalogue. Generally speaking the Selman catalogue seemed to be consistently "best", but it had also had some stars which were off, or spurious. A very demanding exercise. The results are listed below. If the published catalogue gave a satisfactory position, it was adopted. Otherwise my own determination (code MM) is shown.

Ps. Tycho-2 gives a position for 30 Dor, but it is slightly too far south for R136a1+2. The PPM position is better at (J2000) 05:38:42.399-69:06:02.81.

Refs:

Breysacher J., Azzopardi M., Testor G. 1999, Astron. Astrophys. Suppl. 137,117
Wergeilt G., Albrecht R, Barbieri C. et al 1991, ApJ 378, L21.

Table 1. Positions of stars in R136.

Name	RA (J2000)	DEC (J2000)	V	Spect	BAT99-	Other	Source
R136a1	5 38 42.380	-69 06 02.95	12.92	WN5h	108		MM
R136a2	5 38 42.404	-69 06 02.89	11.50	WN5h	109	Selman 1	S
R136a3	5 38 42.336	-69 06 03.26	13.01	WN4.5h	106	R136-006	MH
R136a4	5 38 42.347	-69 06 02.58				[P93]945p	MM
R136a5	5 38 42.427	-69 06 02.73	13.82	O3If/WN6-A	110		MM
R136a6	5 38 42.296	-69 06 03.60	12.29?			Selman 7?	MM
R136a7	5 38 42.411	-69 06 02.56	14.06			R136--024	MH
R136a8	5 38 42.357	-69 06 02.58				[P93]945f	MM
R136b	5 38 42.744	-69 06 03.76	13.08	WN9ha	111	Selman 18	S
R136c	5 38 42.904	-69 06 04.81	13.12	WN5c	112	Selman 27	S

Notes:

R136a2 : [P93] 954

R136a4,a8: Very close pair. Single entry in [P93].

R136a6 : Probably Selman 7, but their coordinates off.

R136b : [P93] 985

R136c : [P93] 998

Table 2 : Stars Defining the Reference Frame.

Name	RA 2000	DEC 2000	V	S
Selman 115	5 38 42.086	-69 06 00.08	14.95	S
Selman 060	5 38 42.130	-69 06 00.64	13.97	S
Selman 022	5 38 42.479	-69 06 04.40	13.65	S
Selman 111	5 38 42.645	-69 06 00.89	14.64	S
R136-047	5 38 42.645	-69 06 01.85	14.75	MH
Selman 018	5 38 42.744	-69 06 03.76	13.08	S
Selman 027	5 38 42.904	-69 06 04.81	13.12	S

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Variable Stars South

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