Southern African Large Telescope

Title: **The list of spectrophotometric standard stars for HRS**

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ABSTRACT

In this report I present the list of selected spectrophotometric standard stars (SPST) for HRS observations. This list, from my point of view, should be used by our team to get correct spectral distributions for the reduced HRS data. I will recommend to observe these stars as SPST with HRS as minimum once per one-two weeks, depending on their availability on the sky during twilight time. From my personal point of view, LR and MR modes need SPST observations surely and HR mode possibly.

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1 Introduction

HRS should be useful instrument for those science cases, where scientists need the whole spectral region simultaneously with the high resolution. Additionally to that, HRS is the fiber-fed echelle spectrograph, that means that its orders have to be corrected for the blaze effect with high level of accuracy. Taking into account these two HRS features, it is obvious that HRS has to be very useful for spectrophotometric science cases, where the knowledge of intensity of emission lines relative, say, Hβ line, is very important for calculation of chemical element abundances. Such scientific cases are studies of HII regions and PNe, both from the Milky Way and extragalactic ones. In all these cases, the detection of the continuum itself is not very important, but important are fluxes of detected lines, so HRS could work with much fainter magnitudes compare to continium sources like stars.

User need to remember that in case of SALT spectrophotometric standards can be used for relative spectral (shape) calibration, but NOT absolute flux calibration.

Unfortunately, the current list of spectrophotometric standard stars, which we have at SALT, is not useful, since all standards there are too faint for HRS observations from one side and have very sparce measurements of their relative fluxes.

2 Sample of Spectrophotometric standards for HRS

Many different sources in the Internet were checked in try to form the sample of spectrophotometric standard stars for HRS. HRS spectrophotometric standard, from my point of view, need to accept two main criteria:

1. They need to be bright with magnitudes brighter than, say, 10th magnitude in V
2. Their fluxes has to be given with steps less than 10 Å and ideally with steps less than 5 Å.

The final list of accepted candidates is shown in Table 1. This list consist of stars collected mainly from "CALSPEC Calibration Database" located at `http://www.stsci.edu/hst/observatory/crds/calspec.html` and contains the composite stellar spectra that are flux standards on the HST system. The final table was additionally preselected by V magnitude and coordinates to be available for SALT observation. All selected stars are from standard stars with STIS or NICMOS fluxes (Bohlin, Dickinson, & Calzetti 2001). All selected standards have fluxes with step 3 Å in the blue region 3800–5400 Å and step 5 Å in the red region 5400–9000 Å, that is acceptable for HRS.

In Table 1 columns show: (1) Star name, (2-3) Coordinates for 2000.0, (4) Spectral type, (5) V-magnitude, (6) (B-V) colour, (7-8) Proper motions and (9) names in CDBS database.

3 Conclusions

I have created the list of spectrophotometric standards for HRS, which, from my point of view, should could be used by our team to get correct spectral distributions for the reduced

Table 1: Sample of Spectrophotometric standards for HRS

Star name	RA(2000)	Dec(2000)	Sp.T.	V (mag)	B-V (mag)	PM(ra) (mas/yr)	PM(dec) (mas/yr)	CDBS name
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
HD009051	01 28 46.502	-24 20 25.44	G7III	8.92	0.81	52.81	-17.27	hd009051
HD14943	02 22 54.675	-51 05 31.67	A5V	5.91	0.19	22.15	65.77	hd14943
ksi2 Ceti	02 28 09.543	+08 27 36.20	B9III	4.28	-0.04	41.80	13.55	ksi2ceti
HD031128	04 52 09.910	-27 03 50.95	F4V	9.14	0.41	165.55	-27.75	hd031128
LAM LEP	05 19 34.524	-13 10 36.44	B0.5IV	4.27	-0.23	-3.30	-4.91	lamlep
HD37962	05 40 51.967	-31 21 03.99	G2V	7.85	0.65	-57.91	-365.20	hd37962
MU COL	05 45 59.895	-32 18 23.16	O9.5V	5.15	-0.26	-22.24	2.4	mucol
HD38949	05 48 20.059	-24 27 49.86	G1V	7.80	0.57	-30.47	-36.46	hd38949
HD60753	07 33 27.318	-50 35 03.32	B3IV	6.68	-0.09	-3.46	5.50	hd60753
HD074000	08 40 50.804	-16 20 42.52	sdF6	9.66	0.45	351.36	-484.58	hd074000
HD106252	12 13 29.509	+10 02 29.90	G0	7.36	0.64	23.76	-279.50	hd106252
HD111980	12 53 15.053	-18 31 20.00	F7V	8.38	0.53	299.64	-794.83	hd111980
BD+02 3375	17 39 45.596	+02 24 59.60	A5	9.93	0.45	-364.21	74.81	bd02d3375
HD160617	17 42 49.324	-40 19 15.53	F	8.73	0.45	-61.77	-395.70	hd160617
HD200654	21 06 34.750	-49 57 50.28	G	9.11	0.63	192.53	-274.00	hd200654
HD205905	21 39 10.152	-27 18 23.67	G2V	6.74	0.62	385.21	-84.84	hd205905

HRS data. I will recommend to observe these stars as SPST with HRS as minimum once per one-two weeks, depending on their availability on the sky during twilight time. From my personal point of view, LR and MR modes need SPST observations surely and HR mode possibly.

References

Bohlin, R. C., Dickinson, M. E., Calzetti, D. 2001, AJ, 122, 2118