

112.25ES_UVES

Abstract

These FLAMES/UVES spectra were observed as part of the ESO program 112.25ES.001 with the main scientific goal of estimating interstellar extinction of 16 Galactic Cepheid variable stars. For this purpose, we observed neighboring field stars of the Cepheids, queried from the Gaia Data Release 3 (Gaia DR3) catalog, with the FLAMES multi-object spectrograph. The instrument setup was such that, on average, 115 field stars were observed with the GIRAFFE spectrograph in MEDUSA mode and 2-7 field stars with the UVES spectrograph in the Red Arm mode. This release covers only the UVES data, as the ESO automatic reduction process covered the GIRAFFE spectra, which are available for download from the [ESO Science Portal](#). The fibers fed to UVES have a diameter of 1 arcsec, and the cross-dispersed echelle spectroscopy provides a spectral resolving power of $R=47,000$.

NB: The uncertainties provided by the data reduction pipeline are unrealistically small. This resulted in a very high value for signal-to-noise ratio in the file headers, which does not reflect the true quality of the spectra. We encourage the user to use an alternative uncertainty estimation, such as the root mean square (RMS) of the spectra.

Overview of Observations

We observed with UVES in two setups: six exposures of 360 s with the central wavelength of 580 nm, and three exposures of 360 s with the central wavelength of 860 nm, together providing spectral coverage from 480 nm to 1100 nm. In total, we observed 71 field stars of the 16 Galactic Cepheids with UVES.

Release Content

The list of targets observed with UVES during the program is given below. The columns detail the name of the Cepheid the star is associated with, the ID of the star in the Gaia DR3 catalog, J2000 coordinates in degrees, and the date of the observation.

All targets were observed with the same resolution and had the same observing time: $R=47000$, 6x360 s exposures with the 580-nm setup, and 3x360 s exposures with the 680-nm setup. Each science file includes a single exposure with one setup

The signal-to-noise ratio is not given due to the unreliable uncertainty estimates of the spectra.

Cepheid	Target (Gaia DR3)	RA (deg)	Dec (deg)	Observing date
L Car	5250032683937583744	146.420	-62.488	2023-12-07
	5250033096254356864	146.239	-62.515	2023-12-07
U Car	5338361229026828032	164.411	-59.685	2024-01-23
	5338358647711164800	164.515	-59.745	2024-01-23
	5338360296971670528	164.524	-59.701	2024-01-23
	5338359785917770112	164.374	-59.711	2024-01-23
VY Car	5351159544359772160	161.265	-57.593	2024-01-23
	5351158135610464512	161.241	-57.609	2024-01-23
	5351162258779289472	161.085	-57.524	2024-01-23
KN Cen	5864130578314639488	204.033	-64.523	2024-03-06
	5864129719321070080	204.083	-64.548	2024-03-06
	5864123465847406208	204.268	-64.563	2024-03-06
	5864123701989905152	204.218	-64.554	2024-03-06
S Cru	6060185321252308224	193.515	-58.377	2024-01-23
	6060172505068176384	193.634	-58.443	2024-01-23

	6060173638939582464	193.601	-58.394	2024-01-23
	6060172779946397952	193.534	-58.467	2024-01-23
	6060172573787667584	193.649	-58.432	2024-01-23
	6060173089184035968	193.468	-58.446	2024-01-23
beta Dor	4757577368762414720	83.399	-62.586	2023-10-24
	4757600767743408384	83.596	-62.511	2023-11-04
	4757614339839915264	83.209	-62.437	2023-10-24
	4757600699023953792	83.631	-62.519	2023-10-24
	4757590665980219776	83.189	-62.491	2023-10-24
	4757613583925679488	83.227	-62.442	2023-11-04
	4757589360310227072	83.209	-62.550	2023-11-04
CV Mon	3127141331463151232	99.314	3.051	2023-11-22
	3130144716191847424	99.245	3.079	2023-11-22
	3127142529755175296	99.305	3.085	2023-11-22
T Mon	3324535309672265728	96.264	7.093	2023-11-22
	3324535795003516160	96.339	7.136	2023-11-22
	3324534244518862848	96.317	7.059	2023-11-22
	3324533561620602624	96.271	7.067	2023-11-22
	3324533905217981184	96.248	7.094	2023-11-22
	3324535142168538880	96.292	7.096	2023-11-22
	3324535210888003328	96.311	7.103	2023-11-22
S Mus	5855853111123649792	183.065	-70.144	2024-01-22
	5855101663643151488	183.284	-70.187	2024-01-22
	5855856581457313408	183.169	-70.095	2024-01-22
LS Pup	5597327106740660224	119.729	-29.308	2023-12-10
	5597330164757353344	119.734	-29.283	2023-12-10
	5597325869790022912	119.813	-29.344	2023-12-10
	5597326866222464384	119.770	-29.327	2023-12-10
	5597327244179576320	119.753	-29.284	2023-12-10
	5597330027318442112	119.702	-29.298	2023-12-10
RS Pup	5546476858619276672	123.231	-34.596	2023-12-19
	5546476996058183680	123.256	-34.573	2023-12-19
	5546476343223081088	123.328	-34.574	2023-12-19
VZ Pup	5600052177589246976	114.599	-28.497	2023-12-10
	5600053925629147264	114.647	-28.454	2023-12-10
WX Pup	5613973094310430976	115.525	-25.867	2023-12-13
	5613973472267577472	115.472	-25.870	2023-12-13
	5613972815125650560	115.550	-25.883	2023-12-13
	5613972510194912512	115.470	-25.908	2023-12-13
X Pup	5620100329008623744	113.244	-20.870	2023-12-08
	5620101084922984064	113.154	-20.939	2023-12-08
	5620098606717220224	113.211	-20.923	2023-12-08
	5620103421385121280	113.196	-20.867	2023-12-08
	5620102562391738240	113.119	-20.892	2023-12-08
	5620103180866973952	113.185	-20.882	2023-12-08
CS Vel	5308879680133463808	145.294	-53.886	2023-12-09
	5308881191961977344	145.306	-53.852	2023-12-09
	5308891671681872768	145.210	-53.842	2023-12-09
	5308893698906806144	145.350	-53.768	2023-12-09
	5308893217872393344	145.263	-53.833	2023-12-09
RZ Vel	5523162917141714944	129.264	-44.087	2023-12-13
	5523160958636626688	129.214	-44.160	2023-12-13
	5523162814062485632	129.216	-44.103	2023-12-13
	5523158965771890176	129.337	-44.150	2023-12-13
	5523163088940419200	129.286	-44.084	2023-12-13
	5523163050271754496	129.304	-44.079	2023-12-13

Release Notes

The spectra were reduced with the EsoReflex UVES-FIBRE pipeline (uves/6.5.2 and uves/6.5.3) with standard calibrations. The spectral reference system is topocentric, and the wavelength provided is measured in air.

Known issues

The uncertainties provided by the data reduction pipeline are unrealistically small. This resulted in a very high value for signal-to-noise ratio in the file headers, which does not reflect the true quality of the spectra.

Data Format

Files Types

The spectra are provided in FITS files with an empty primary HDU followed by the extension with the data consisting of three columns: wavelength (WAVE), source flux (FLUX), and uncertainty (ERR; underestimated).

The files are named in the format:

`<target_ID>U_<580.0 or 860.0>_<file creation date (YYYY-MM-DDThh:mm:ss UT)>.fits`

For example, 5250032683937583744U_580.0_2025-07-02T08/39/16.fits.

Acknowledgements

Please cite the associated scientific publication (Kiviaho et al. 2026, <https://doi.org/10.1051/0004-6361/202661702>) when using this data.

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