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Title	VizieR Online Data Catalog: Abundances of NGC 6362 member stars (Mucciarelli+, 2016)
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J/ApJ/824/73

Abundances of NGC 6362 member stars

(Mucciarelli+, 2016)

NGC 6362: the least massive globular cluster with chemically distinct multiple populations.

Mucciarelli A., Dalessandro E., Massari D., Bellazzini M., Ferraro F.R., Lanzoni B., Lardo C., Salaris M., Cassisi S.

<Astrophys. J., 824, 73-73 (2016)>

=[2016ApJ...824...73M](#) (SIMBAD/NED BibCode)

ADC_Keywords: Clusters, globular ; Abundances ; Spectroscopy ; Photometry, UVB

Keywords: globular clusters: NGC 6362;
stars: abundances; techniques: spectroscopic

Abstract:

We present the first measure of Fe and Na abundances in NGC 6362, a low-mass globular cluster (GC) where first- and second-generation stars are fully spatially mixed. A total of 160 member stars (along the red giant branch (RGB) and the red horizontal branch (RHB)) were observed with the multi-object spectrograph FLAMES at the Very Large Telescope. We find that the cluster has an iron abundance of $[Fe/H] = -1.09 \pm 0.01$ dex, without evidence of intrinsic dispersion. On the other hand, the $[Na/Fe]$ distribution turns out to be intrinsically broad and bimodal. The Na-poor and Na-rich stars populate, respectively, the bluest and the reddest RGBs detected in the color-magnitude diagrams including the U filter. The RGB is composed of a mixture of first- and second-generation stars in a similar proportion, while almost all the RHB stars belong to the first cluster generation. To date, NGC 6362 is the least massive GC where both the photometric and spectroscopic signatures of multiple populations have been detected.

Description:

A total of 219 stars have been selected along the RGB and the red horizontal branch (RHB) from the ACS@HST and WFI@2.2m ESO catalogs presented in Paper I (Dalessandro et al. [2014ApJ...791L...4D](#)).

The observations have been performed with the multiplex facility FLAMES@ESO-VLT in the UVES+GIRAFFE combined mode (PID:093.D-0618, PI:Dalessandro). The employed gratings are the UVES Red Arm CD#3 580, which covers the spectral range between ~ 4800 and $\sim 6800\text{\AA}$ with a spectral resolution of ~ 45000 , and the GIRAFFE setups HR11 ($5597\text{-}5840\text{\AA}$ and $R \sim 24000$) and HR13 ($6120\text{-}6405\text{\AA}$ and $R \sim 22000$).

Objects:

RA	(ICRS)	DE	Designation(s)
17 31 54.99		-67 02 54.0	NGC 6362 = GC1 66

File Summary:

FileName	Lrecl	Records	Explanations
ReadMe	80	.	This file
table1.dat	87	160	Coordinates, magnitudes, atmospheric parameters, [Fe/H] and [Na/Fe] abundance ratios for the target member stars

See also:

[VII/202](#) : Globular Clusters in the Milky Way (Harris, 1997)
[J/MNRAS/431/1995](#) : Deep uVI photometry of NGC2419 (Beccari+, 2013)
[J/A+A/549/A41](#) : Horizontal branch stars in 47 Tuc and M5 (Gratton+, 2013)
[J/A+A/548/A122](#) : Berkeley 39 stars photometry & abundances (Bragaglia+, 2012)
[J/A+A/539/A19](#) : Horizontal branch stars in NGC 1851 (Gratton+, 2012)
[J/AcA/62/357](#) : Proper motions in 6 globular clusters (Zloczewski+, 2012)
[J/A+A/534/A123](#) : Horizontal branch stars in NGC 2808 (Gratton+, 2011)
[J/A+A/534/A9](#) : Synthetic spectra of galactic GCs (Sbordone+, 2011)
[J/MNRAS/412/81](#) : Lithium abundance in M4 red giants (Mucciarelli+, 2011)
[J/A+A/524/A44](#) : CN and CH line strengths in 12 globulars (Pancino+, 2010)
[J/MNRAS/405/839](#) : Spectroscopic obs. of globular clusters (Sharina+, 2010)
[J/ApJ/695/L134](#) : Chemical anomalies in old LMC clusters (Mucciarelli+, 2009)
[J/A+A/490/625](#) : Abundances of NGC 6121 red giants (Marino+, 2008)
[J/AJ/130/2140](#) : Abundances & velocities in globular clusters (Pritzl+, 2005)

Byte-by-byte Description of file: [table1.dat](#)

Bytes	Format	Units	Label	Explanations
1-	6	I6	---	ID [201343/802409] Stellar identifier from Paper I (Dalessandro+, 2014ApJ...791L...4D)
8-	18	F11.7	deg	RAdeg Right Ascension in decimal degrees (J2000)
20-	30	F11.7	deg	DEdeg Declination in decimal degrees (J2000)
32-	37	F6.3	mag	Umag [16.5/18.1]?=0 The U band magnitude
39-	44	F6.3	mag	Bmag [14.4/17.1] The B band magnitude
46-	51	F6.3	mag	Vmag [12.9/16.2] The V band magnitude
53-	56	I4	K	Teff [3886/6006] Effective temperature
58-	61	F4.2	[cm/s2]	log(g) [0.6/2.7] Log surface gravity
63-	65	F3.1	km/s	Vt [1.2/1.9] Turbulent velocity
67-	71	F5.2	[Sun]	[Fe/H] [-1.3/-0.9] Log Fe/H abundance ratio relative to Sun
73-	76	F4.2	[Sun]	e_[Fe/H] [0.02/0.2] Uncertainty in [Fe/H]
78-	82	F5.2	[Sun]	[Na/Fe] [-0.2/0.6] Log Na/Fe abundance ratio relative to Sun
84-	87	F4.2	[Sun]	e_[Na/Fe] [0.06/0.2] Uncertainty in [Na/Fe]

History:

From electronic version of the journal

References:

Dalessandro et al. Paper I. [2014ApJ...791L...4D](#)

(End)

Prepared by [AAS], Emmanuelle Perret [CDS] 16-Aug-2016

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