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J/A+A/576/A14 VEGAS-SSS photometry of NGC3115 (Cantiello+, 2015)

VEGAS-SSS. A VST early-type galaxy survey: analysis of small stellar systems. Testing the methodology on the globular cluster system in NGC3115.

Cantiello M., Capaccioli M., Napolitano N., Grado A., Limatola L., Paolillo M., Iodice E., Romanowsky A.J., Forbes D.A., Raimondo G., Spavone M., La Barbera F., Puzia T.H., Schipani P.

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Keywords: galaxies: stellar content - galaxies: statistics - galaxies: individual: NGC 3115 - galaxies: star clusters: general - surveys - catalogs

Abstract:

We present a study of globular clusters (GCs) and other small stellar systems (SSSs) in the field of NGC 3115, observed as part of the ongoing wide-field imaging survey VEGAS, carried out with the 2.6m VST telescope. We used deep g and i observations of NGC 3115, a well-studied lenticular galaxy that is covered excellently well in the scientific literature. This is fundamental to test the methodologies, verify the results, and probe the capabilities of the VEGAS-SSS. Leveraging the large field of view of the VST allowed us to accurately study the distribution and properties of SSSs as a function of galactocentric distance, well beyond ~ 20 galaxy effective radii, in a way that is rarely possible. Our analysis of colors, magnitudes, and sizes of SSS candidates confirms the results from existing studies, some of which were carried out with 8-10m class telescopes, and further extends them to previously unreached galactocentric distances with similar accuracy. In particular, we find a color bimodality for the GC population and a de Vaucouleurs profile for the surface density of GCs similar to the galaxy light profile. The radial color gradient of blue and red GCs previously found, for instance, by the SLUGGS survey with Subaru and Keck data, is further extended out to the largest galactocentric radii inspected, ~ 65 kpc. In addition, the surface density profiles of blue and red GCs taken separately are well approximated by a $r^{1/4}$ density profile, with the fraction of blue GCs being slightly larger at larger radii. We do not find hints of a trend for the red GC subpopulation and for the GC turnover magnitude to vary with radius, but we observe a ~ 0.2 mag difference in the turnover magnitude of the blue and red GC subpopulations. Finally, from inspecting SSS sizes and colors, we obtain a list of ultracompact dwarf galaxies and GC candidates suitable for future spectroscopic follow-up. In conclusion, our study shows i) the reliability of the methodologies developed to study SSSs in the field of bright early-type galaxies, and ii) the great potential of the VEGAS survey to produce original results on SSSs science, mainly thanks to the wide-field imaging adopted.

Description:

We present g and i band photometry for ~ 47000 extended and point-like objects in the ~ 0.8 square degree area centred on NGC3115. For ~ 30000 object in the catalogue, structural parameters are also available. For each object equatorial coordinates, galactocentric distance from the photometric center of NGC3115, magnitudes in g and i bands (SDSS calibrated), colour, local extinction and structural parameters.

File Summary:

FileName	Lrecl	Records	Explanations
ReadMe	80	.	This file
table3.dat	154	47080	Positions, g and i magnitudes and sizes of the objects in the field of NGC 3115

See also:

[J/A+A/564/L3](#) : JHK photometry of NGC 3115 globular clusters (Cantiello+, 2014)
[J/AJ/148/32](#) : Globular cluster candidates in NGC 3115 (Jennings+, 2014)
[J/A+A/611/A93](#) : NGC3115 & NGC1399 VEGAS-SSS globular clusters (Cantiello+ 2018)

Byte-by-byte Description of file: [table3.dat](#)

Bytes	Format	Units	Label	Explanations
1- 5	I5	---	ID	[4/64352] VEGAS-SSS internal designation (VEGAS-SSS-N3115-NNNNN)
7- 17	F11.7	deg	RAdeg	Right ascension (J2000.0)
19- 28	F10.7	deg	DEdeg	Declination (J2000.0)
30- 33	F4.1	arcmin	Rgc	[0.3/37.1] Distance from centre

