

# **New VVV Survey Globular Cluster Candidates in the Milky Way Bulge**

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## **Abstract**

It is likely that a number of Galactic globular clusters remain to be discovered, especially toward the Galactic bulge. High stellar density combined with high and differential interstellar reddening are the two major problems for finding globular clusters located toward the bulge. We use the deep near-IR photometry of the VISTA Variables in the Vía Láctea (VVV) Survey to search for globular clusters projected toward the Galactic bulge, and hereby report the discovery of 22 new candidate globular clusters. These objects, detected as high density regions in our maps of bulge red giants, are confirmed as globular cluster candidates by their color–magnitude diagrams. We provide their coordinates as well as their near-IR color–magnitude diagrams, from which some basic parameters are derived, such as reddenings and heliocentric distances. The color–magnitude diagrams reveal well defined red giant branches in all cases, often including a prominent red clump. The new globular cluster candidates exhibit a variety of extinctions ( $0.06 < A_K < 2.77$ ) and distances ( $5.3 < D < 9.5$  kpc). We also classify the globular cluster candidates into 10 metal-poor and 12 metal-rich clusters, based on the comparison of their color–magnitude diagrams with those of known globular clusters also observed by the VVV Survey. Finally, we argue that the census for Galactic globular clusters still remains incomplete, and that many more candidate globular clusters (particularly the low luminosity ones) await to be found and studied in detail in the central regions of the Milky Way..