Milky Way's satellite globular cluster studied in detail
26 September 2019, by Tomasz Nowakowski

Using the Canada–France–Hawaii Telescope (CFHT) and Keck Observatory, an international group of astronomers has performed a photometric and spectroscopic study of Laevens 3—a satellite globular cluster in the Milky Way galaxy. The research, detailed in a paper published September 18 on the arXiv pre-print repository, provides insights into the properties of this cluster.

"We present a photometric and spectroscopic study of the Milky Way satellite Laevens 3. Using MegaCam/CFHT g and i photometry and Keck II/DEIMOS multi-object spectroscopy, we refine the structural and stellar properties of the system," the astronomers wrote in the paper.

The study found that Lae 3 is larger and older than previously thought. The color-magnitude diagram shows that it is about 13 billion years old, while broadband photometry analysis indicates that it has a half-light radius of approximately 37 light-years.

The distance to Lae 3 was calculated to be some 200,000 light-years and its metallicity was measured to be at a level of -1.8. The research also found that the cluster's total luminosity is about 1,125 solar luminosities, which translates into an absolute magnitude of -2.8 mag.

The study confirmed that Lae 3 has an outer halo orbit with a pericenter of about 133,000 light-years and an apocenter of approximately 279,000 light-years.

According to the paper, all the results suggest that Lae 3 exhibits the main characteristics of Milky Way outer halo globular clusters. Moreover, the study found that Lae 3 showcases signs of mass
segregation, which confirms the globular cluster nature of this system.

"Overall, Laevens 3 shares the typical properties of the Milky Way's outer halo globular clusters. Furthermore, we find that this system shows signs of mass segregation, which strengthens our conclusion that Laevens 3 is a globular cluster," the researchers concluded.