Long-period variable stars in the nearest starburst dwarf galaxy in The Local Group, IC10

Mahtab Gholami[1,2] , Atefeh Javadi[1] , Jacco Th. van Loon[3], Hamidreza Mahani[1], Habib Khosroshahi[1], and Elham Saremi[1,4,5]

[1]School of Astronomy, Institute for Research in Fundamental Sciences (IPM), Tehran, Iran

[2]Osservatorio Astronomico di Capodimonte, INAF, Naples, Italy

[3]Lennard-Jones Laboratories, Keele University, ST5 5BG, UK

[4]Instituto de Astrofìsica de Canarias, C/ Vìa Làctea s/n, 38205 La Laguna, Tenerife, Spain

[5]Departamento de Astrofìsica, Universidad de La Laguna, 38205 La Laguna, Tenerife, Spain

To identify the Long-period variable (LPV) stars in IC10 as the nearest starburst dwarf galaxy in the Local Group, we conducted an optical monitoring survey using the 2.5-m Isaac Newton Telescope with the wide-field camera in the i-band and V-band from 2015 to 2017. Within an area of CCD4, we obtained photometric catalogs for 53579 stars, of which 762 are classified as variable candidates. Also, 518 variable candidates are identified as LPV based on their amplitude variability in the i-band magnitude, mostly asymptotic giant branch stars and red supergiants within the CCD4 area. By comparing our output catalog to the other catalogs, we determined the success of our detection method. Additionally, we found all the confirmed LPVs that Gaia DR3 detected in IC10 among our identified LPVs. In this paper, we investigate the variable star survey's methodology and the photometric catalog.