

Abstract Submitted
for the FWS19 Meeting of
The American Physical Society

An Automated Pipeline for Globular Cluster Detection in Virgo Cluster Dwarf Galaxies EMILY ZHOU, Harker Upper School, JUSTIN YAO DU, Cupertino High School, BRIAN PEREZ WENCES, East Palo Alto Academy, PURAGRA GUHATHAKURTA, University of California Santa Cruz, ERIC W. PENG, YOUKYUNG KO, Peking University — The goal of this research is to characterize globular clusters (GCs) in Virgo Cluster dwarf galaxies. We focus on GCs close to the centers of their host galaxy, where the host galaxies light inevitably interferes with GC detection. Our dataset contains 1145 Virgo Cluster dwarf galaxies imaged in u^* , g , i , and z bands, obtained using CFHT/MegaCam from the Next Generation Virgo Cluster Survey. For each galaxy, we use isophote fitting to estimate its light distribution and subtract that distribution model from the image, revealing compact objects close to the galaxy. An automation of this technique subtracted galaxy light for about 56% of the images. This method was most effective for elliptical galaxies; irregular galaxies produced poor results because they departed from the expected elliptical symmetry. If a satisfactory light model couldnt be generated, then a ring median filter approximated the galaxy light distribution by estimating each pixel's background. We show a proof of concept using Source Extractor to characterize objects in the subtracted images and identify GC candidates through comparisons with other known GCs. This research was conducted by high school students under the auspices of the Science Internship Program at the University of California Santa Cruz.

Emily Zhou
Harker Upper School

Date submitted: 07 Oct 2019

Electronic form version 1.4