The Oldest Star Clusters in the Small Magellanic Cloud

Kenneth J. Mighell

Kitt Peak National Observatory, National Optical Astronomy Observatories, P. O. Box 26732, Tucson, AZ 85726-6732, USA

Ata Sarajedini

Department of Physics and Astronomy, San Francisco State University, 1600 Holloway Avenue, San Francisco, CA 94132, USA

Rica S. French

Middle Tennessee State University, Physics & Astronomy Department, WPS 219, P. O. Box 71, Murfreesboro, TN 37132, USA

Abstract. We present our analysis of archival Hubble Space Telescope Wide Field Planetary Camera 2 (WFPC2) observations in F450W (∼B) and F555W (∼V) of the intermediate-age populous star clusters NGC 121, NGC 339, NGC 361, NGC 416, and Kron 3 in the Small Magellanic Cloud. We use published photometry of two other SMC populous star clusters, Lindsay 1 and Lindsay 113, to investigate the age sequence of these seven star clusters in order to improve our understanding of the formation chronology of the SMC. We analyzed the V vs B−V and MV vs (B−V)0 color-magnitude diagrams of these populous Small Magellanic Cloud star clusters using a variety of techniques and determined their ages, metallicities, and reddenings. These new data enable us to improve the age-metallicity relation of star clusters in the Small Magellanic Cloud. In particular, we find that a closed-box continuous star-formation model does not reproduce the age-metallicity relation adequately. However, a theoretical model punctuated by bursts of star formation is in better agreement with the observational data. The full details of this analysis are reported in Mighell, Sarajedini, & French (1998, AJ, 116, 2395).

1This research was supported by a grant from the National Aeronautics and Space Administration (NASA), Order No. S-67046-F, which was awarded by the Long-Term Space Astrophysics Program (NRA 95-OSS-16).

2Hubble Fellow

3Based on research conducted at NOAO as part of the Research Experiences for Undergraduates program.

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