Hubble Space Telescope

Cycle 15 AR Proposal

Be Stars and Circumstellar Disks in NGC 346

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Abstract

We propose to analyze the HST ACS and NICMOS images of the young star cluster NGC 346 in the Small Magellanic Cloud. These data will complement our ongoing investigation of the role of age and metallicity in the formation of circumstellar disks around near-main-sequence classical Be stars. The superior spatial resolution of the ACS images will allow us to investigate stars in the inner core of the cluster, where our existing ground-based images did not provide sufficient resolution to adequately separate the individual stars. Ground-based investigations have shown that a number of classical Be stars are present in this cluster, even though the cluster would seem to be too young to have a substantial population of such systems based on current ideas of Be star disk formation. The ACS and NICMOS observations will allow us to better characterize the number of Be stars by probing the inner cluster region, and will allow us to look for differences in the relative fraction of Be stars in the inner cluster compared with the outer regions. We will also compare these data with ground-based survey data to look for temporal changes in disk systems in the outer part of the cluster.

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