Hubble Space Telescope

Cycle 16 AR Proposal

RR Lyrae Variables in Local Group Galaxies

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Scientific Category: RESOLVED STELLAR POPULATIONS

Scientific Keywords: GALAXY FORMATION AND EVOLUTION, LOCAL GROUP GALAXIES, RESOLVED STELLAR POPULATIONS, VARIABLE AND PULSATING STARS

Total Budget Amount: $69,638

Abstract

We propose to reduce and analyze WFPC2 images of 5 Local Group galaxies in order to identify and characterize their RR Lyrae variables. These galaxies, which include NGC 147, IC 10, LGS 3, Tucana, and Andromeda V, have no published variability studies using HST imaging.The presence of RR Lyrae variables would suggest that an old (Age >~ 10 Gyr) stellar population is present in these galaxies. In additon, because the minimum-light color of ab-type RR Lyraes is a constant irrespective of metallicity or period, these stars can be used to study the extinction properties of each galaxy. Furthermore, the period of ab-type RR Lyraes is directly related to their metal abundance so that we can also study the metallicity distribution function of each galaxy. Lastly, it is well known that RR Lyraes are excellent distance indicators allowing us to measure the distance of each galaxy.

Investigators:

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Number of investigators: 1

Dataset Summary:

Instrument	No. of Datasets	Retrieval Method	Retrieval Plan
WFPC2	7	FTP	Over several weeks