Hubble Space Telescope

Cycle 15 AR Proposal

# A High Resolution alpha-enhanced Stellar Library for Evolutionary Population Synthesis

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Scientific Category: UNRESOLVED STELLAR POPULATIONS

Scientific Keywords: CHEMICAL ABUNDANCES, STELLAR POPULATIONS IN EXTERNAL GALAXIES, RESOLVED STELLAR POPULATIONS

Total Budget Amount: $60,598

Theory: Yes

## Abstract

Libraries of stellar spectra are fundamental tools for the study of stellar populations. We propose to create a high-resolution stellar library with alpha-enhanced compositions, computed with the latest improvements in stellar atmospheres, ranging from near-UV to the near-IR. The library will span all stellar types that are relevant for evolutionary models. The atomic and molecular line list will be calibrated with unprecedented accuracy by using the new NGSL, an empirical stellar library created with STIS HST observations. The library will be implemented on evolutionary synthesis codes to create for the first time an appropriate tool to study and model stellar systems that have undergone different star formation histories than that of our local universe.

## Investigators:

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