

# **The AGB Contribution to the Dust Budget of the Magellanic Clouds and other Local Group Dwarf Galaxies**

*Martha L. Boyer (NASA GSFC), Sundar Srinivasan (ASIAA), Margaret Meixner (STScI), Benjamin Sargent (RIT), David Riebel (US Naval Academy)*

Several high-redshift galaxies show large amounts of infrared excess, usually attributed to interstellar dust. The source of this dust is still unknown, since dust evolution models are unable to account for the observed dust mass using typical assumptions of stellar dust production and of dust destruction by supernovae shocks. The dust production by individual asymptotic giant branch (AGB) stars, long thought to be major dust contributors, can be estimated by modeling the full stellar spectral energy distribution (SED) out to the mid-infrared, but, until recently, this sort of analysis has been limited to small samples of resolved AGB stars. Recent *Spitzer* imaging has allowed for a near-complete census of AGB stars in the Magellanic Clouds, providing the data necessary for estimating a current snapshot of the total AGB dust production in these galaxies. We present the results of full SED modeling of the more than 9,000 AGB stars and red supergiants (RSGs) in the Small Magellanic Cloud, using the *Grid of RSG and AGB ModelS* (GRAMS), and find that these dust-producing stars cannot explain the current interstellar dust masses observed in these galaxies, similar to the findings in the Large Magellanic Cloud and to the findings of several models of dust evolution in unresolved galaxies and the Milky Way. In addition, we present early results from the DUST In Nearby Galaxies with *Spitzer* (DUSTINGS) program, which has identified the dustiest AGB stars in 50 other Local Group dwarf galaxies that span a wide distribution in star formation history, mass, and metallicity.