

# **Understanding Assembly of Disks using Local and High Redshift Bars from the Spitzer Survey of Stellar Structure in Galaxies, DEEP2, AEGIS and COSMOS.**

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The Spitzer Survey of Stellar Structure in Galaxies (S4G) is the largest, deepest homogeneous survey at mid-infrared wavelengths of 2350+ galaxies in the nearby Universe. Chosen based on apparent blue-band magnitude, heliocentric velocity, galactic latitude and size, the survey provides the ultimate data base for a study of stellar structure and mass in the nearby Universe. It is thus the anchor for cosmological studies that seek to understand the formation and evolution of galaxies – they must reproduce the mass distribution and stellar structures and their properties as measured by S4G. In this talk I will present the latest results from the S4G survey including those from studies of thin and thick disk structures, the definitive local bar fraction and bar properties as a function of host galaxy properties, disk properties such as scale lengths, profiles and breaks etc. I will connect these detailed results on local galaxies and the local bar fraction to the cosmological evolution of the bar fraction derived from COSMOS and other surveys to constrain the detailed assembly history of disk galaxies.