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The impact of bars on disk breaks as probed by S^{4}G

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Abstract

The different processes governing the secular evolution of galactic disks are encoded in the present-day stellar density profiles of nearby galaxies. It is now widely known that most disks exhibit a broken exponential profile, with an inner disk followed by a steeper outer one. Radial rearrangement of stars and angular momentum can play a significant role here, thus making disk breaks a key probe of secular evolution. We present results of a study of disk breaks framed within the Spitzer Survey of Stellar Structure in Galaxies (S^{4}G, Sheth et al. 2010). This is a volume-, magnitude- and size-limited survey of over 2300 nearby galaxies imaged at 3.6 and 4.5 microns, which allows us to peer through dust at the old stellar backbone of disks. We describe the main structural properties of breaks at this wavelength regime. In particular, we highlight new interesting results regarding the role that resonances play in creating breaks, and their relevance in the context of stellar migration.