



The Stellar Archeology of the M33 Disk: Recent Star-Forming History and Constraints on the Timing of an Interaction with M31

T. J. Davidge, T. H. Puzia

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Images recorded with MegaCam are used to investigate the recent star-forming history (SFH) of the Local Group Sc galaxy M33. The properties of the stellar disk change near $R = 8$ kpc. Within this radius the star formation rate (SFR) has been constant with time during at least the past 250 Myr, while at larger radii the SFR has declined during this same time period. That the recent SFR in the inner disk has been constant suggests that M33 has evolved in isolation for at least the past ~ 0.5 Gyr, thereby providing a constraint on the timing of any recent interaction with M31. The fractional contribution that young stars make to the total mass of the stellar disk changes with radius, peaking near 8 kpc. Evidence is also presented that the SFR during the past 100 Myr in the southern half of the galaxy has been ~ 0.4 dex higher than in the northern half. Finally, structures with sizes spanning many kpc that contain blue objects - presumably main sequence stars that formed during intermediate epochs - are identified near the disk boundary. It is argued that these are tidal features that were pulled from the main body of M33 and - in some cases - are the fossil remnants of star formation that occurred in an extended disk during intermediate epochs.

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