



A Portrait of the
Triangulum
Advancing a New Frontier
of Galaxy Evolution with
Resolved Stars

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TNG50

Illustris TNG50 Team (Nelson et al.)

Messier 33

M33 is a Local
Group Member,
~740 kpc away

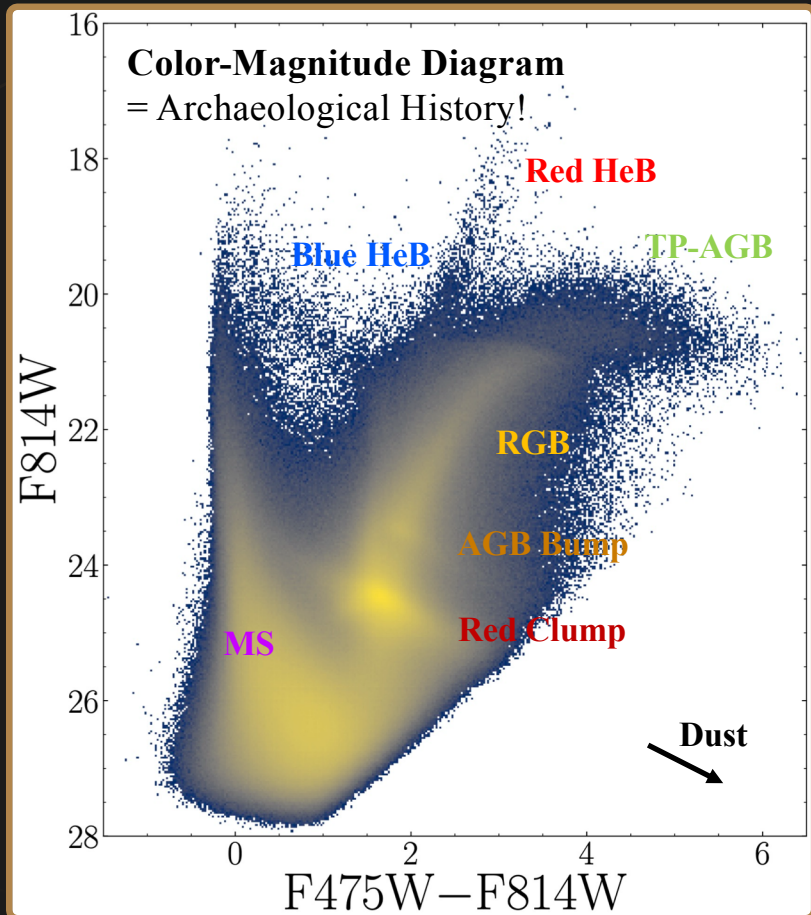
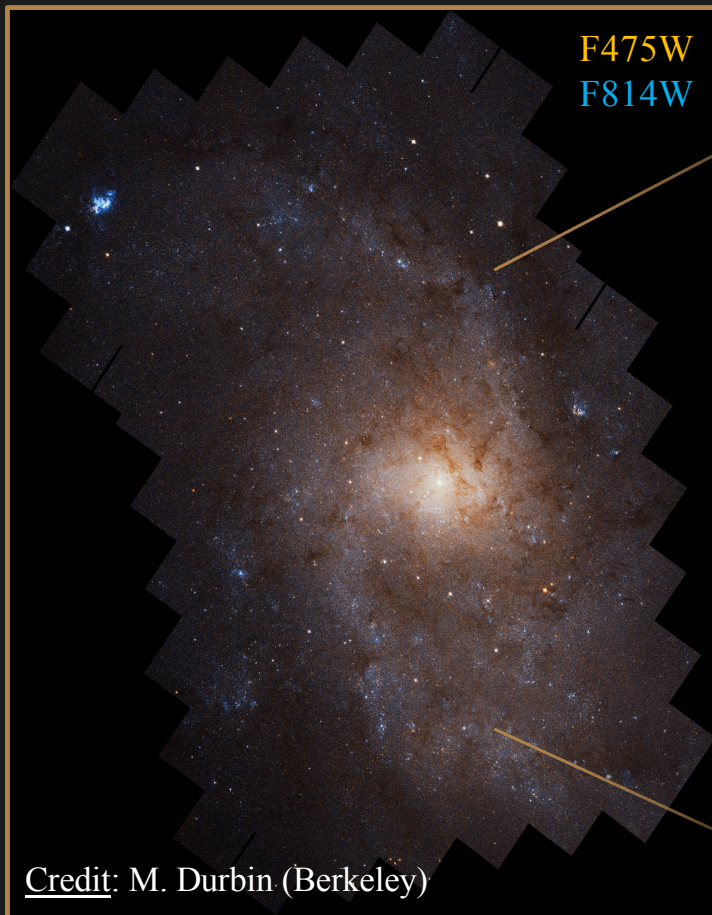
An archetypical local
galaxy



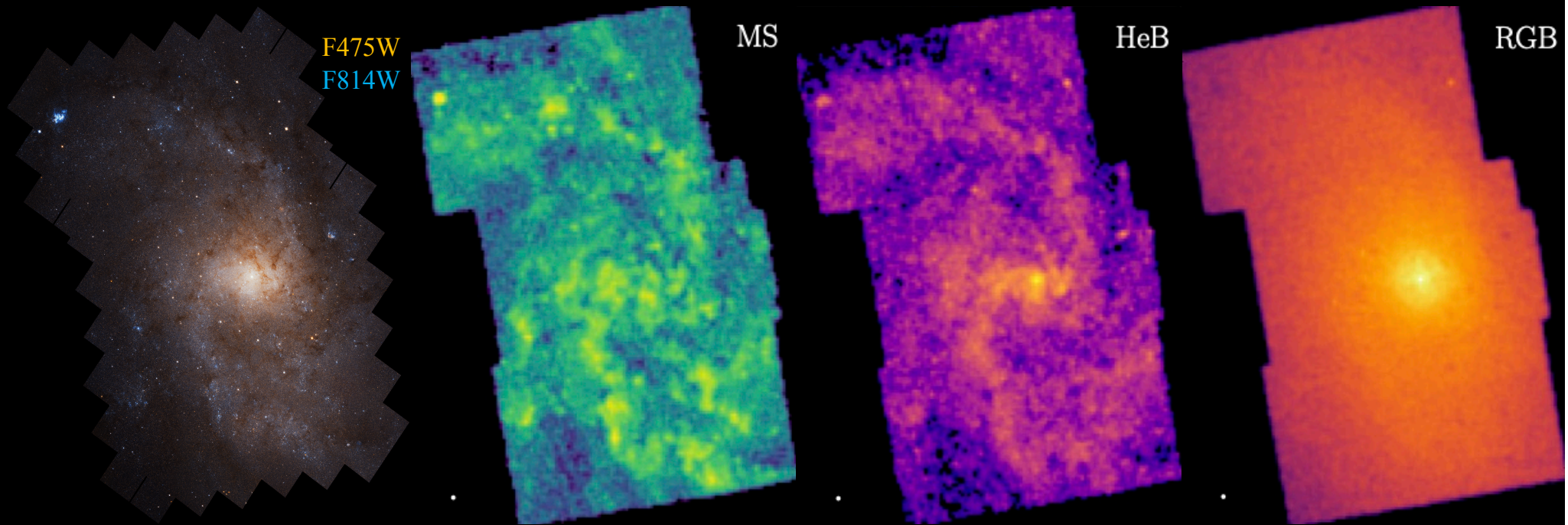
HST “PHATTER” Survey
(Williams+21)

6 filters, UV–IR
22 millions stars

The PHATTER Survey of M33



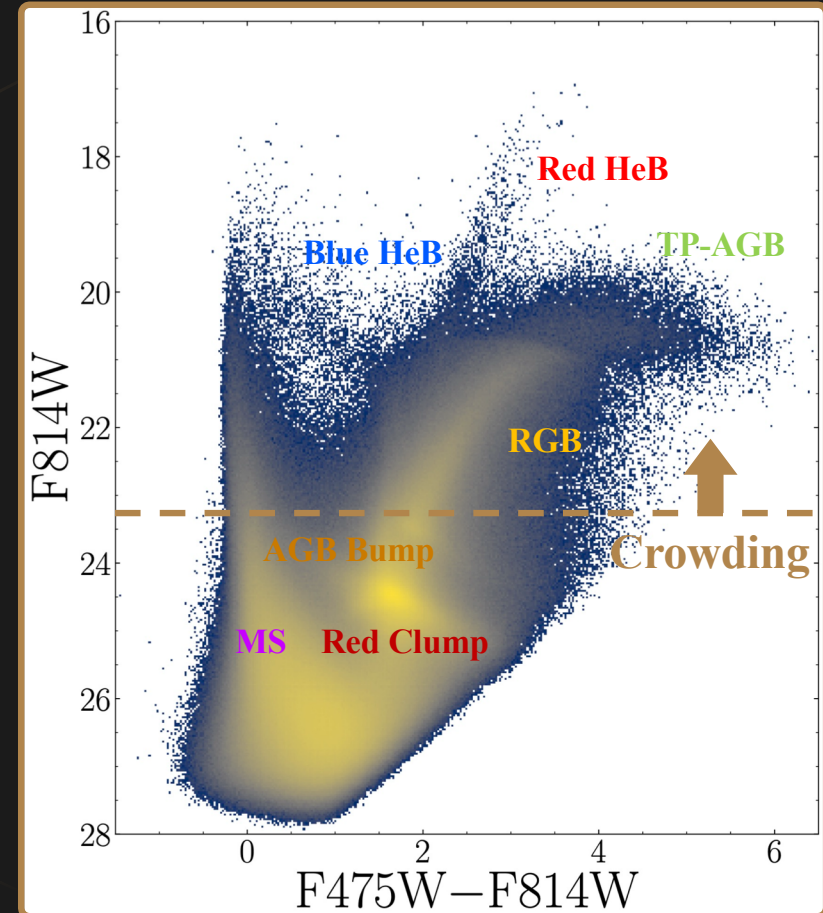
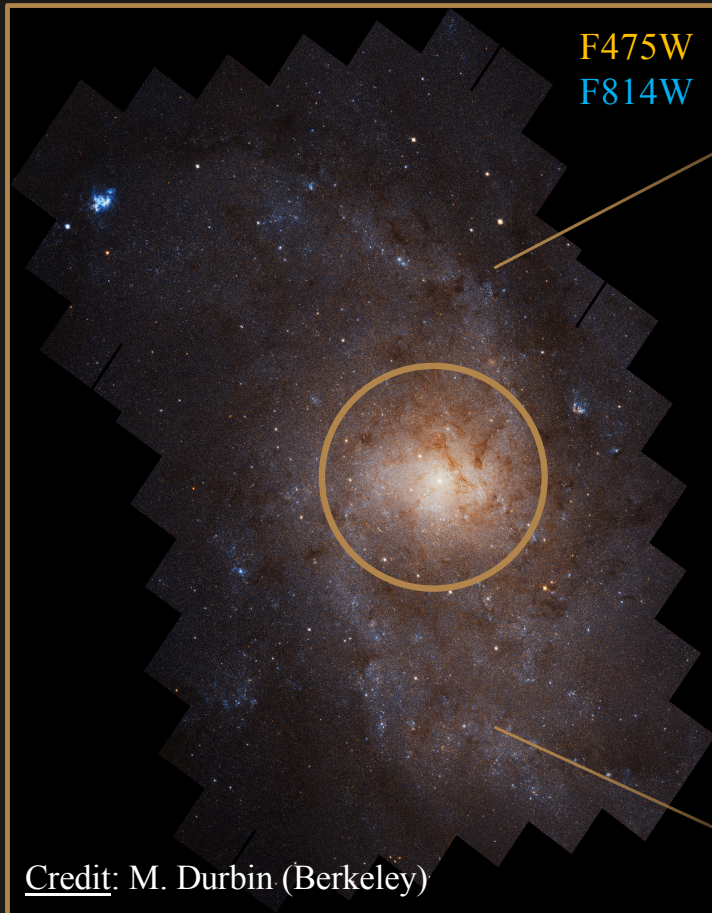
Revealing Hidden Structure in M33



Smercina et al. 2023



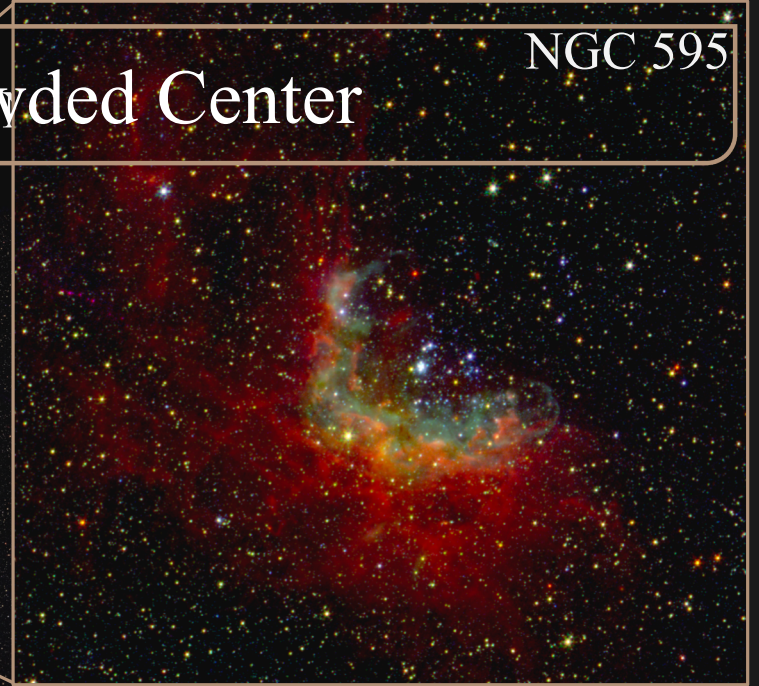
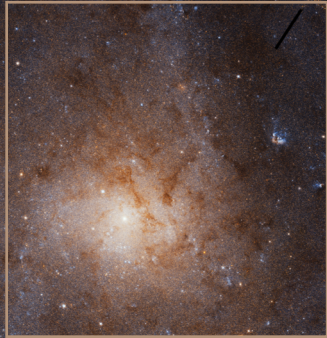
The PHATTER Survey of M33



PHATTER (HST)

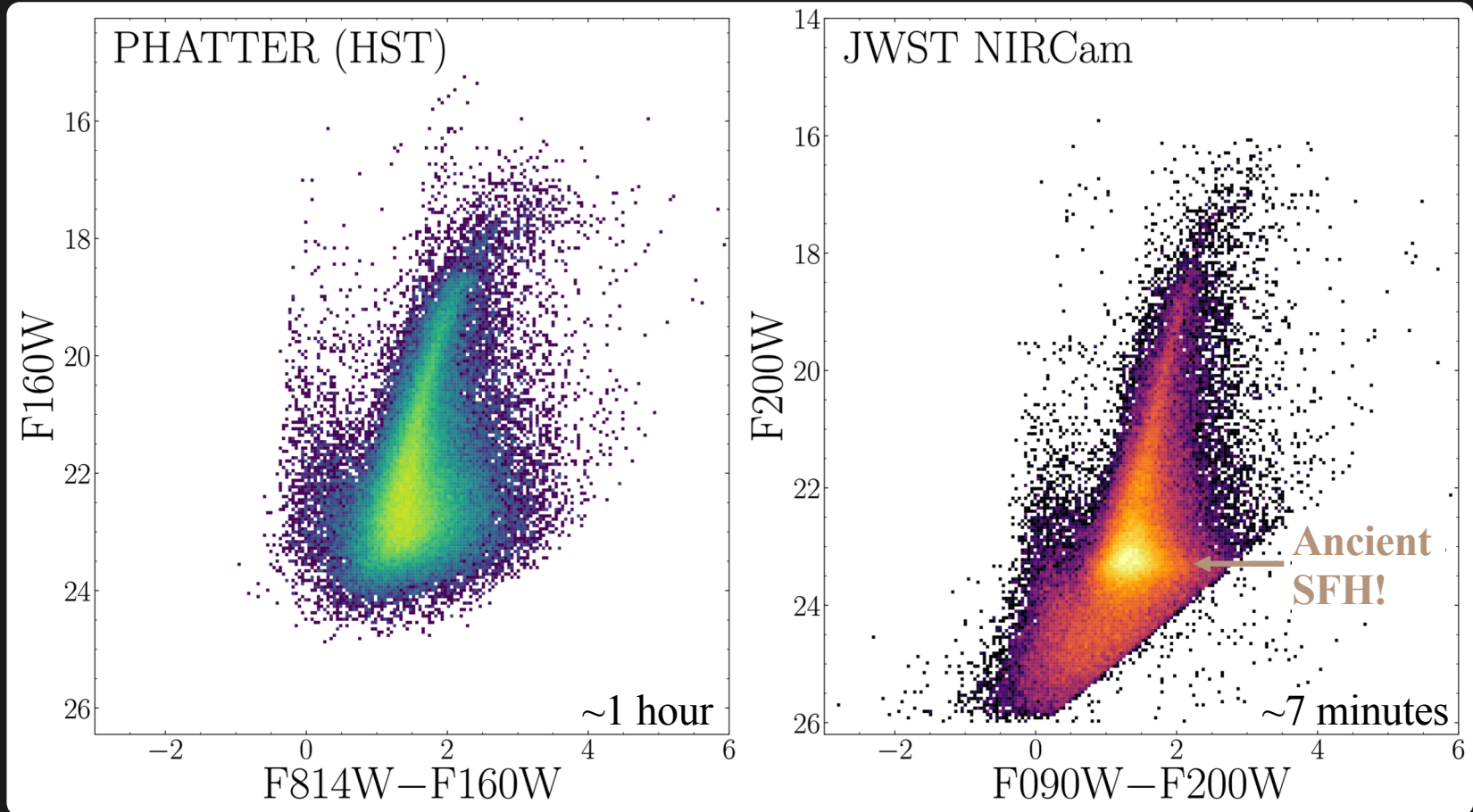
JWST Reveals M33's Crowded Center

NGC 595

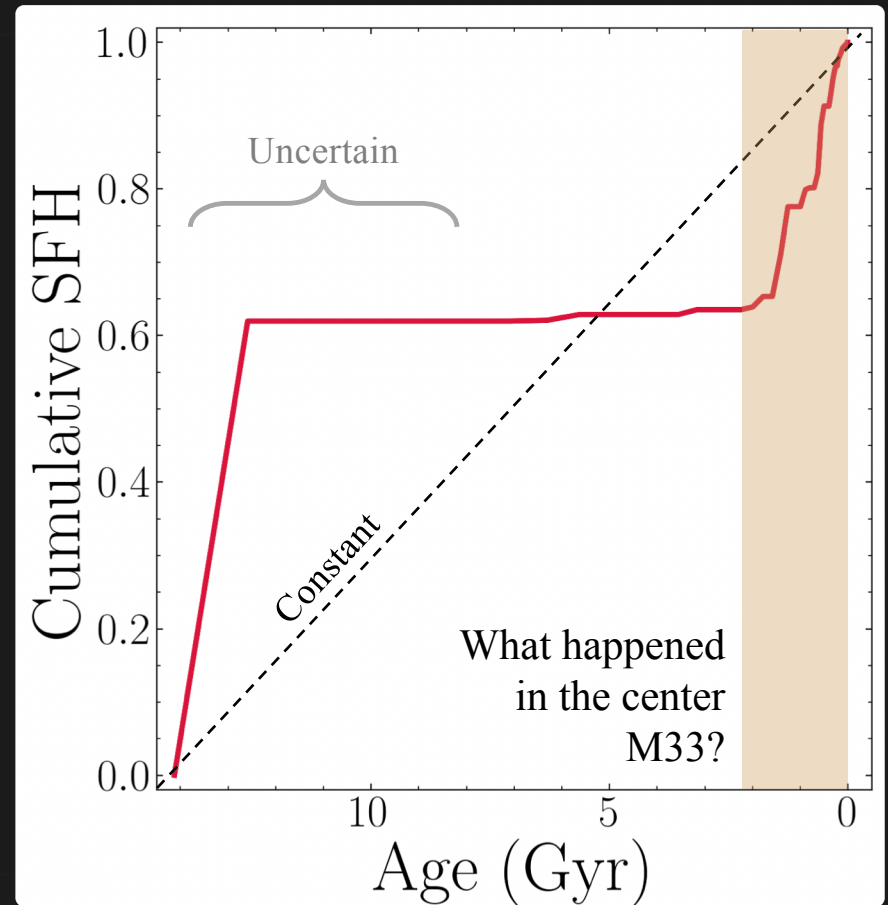
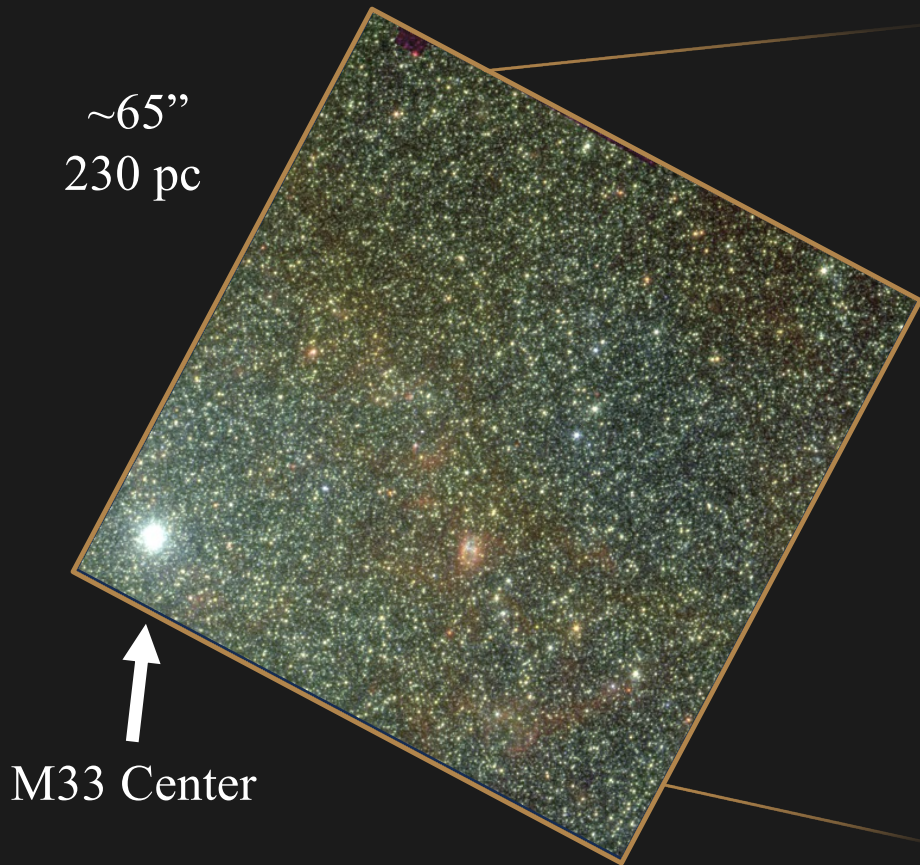


M33's Nuclear
Star Cluster

JWST Reveals M33's Crowded Center



M33's SFH: A Recently-Rejuvenated Center?



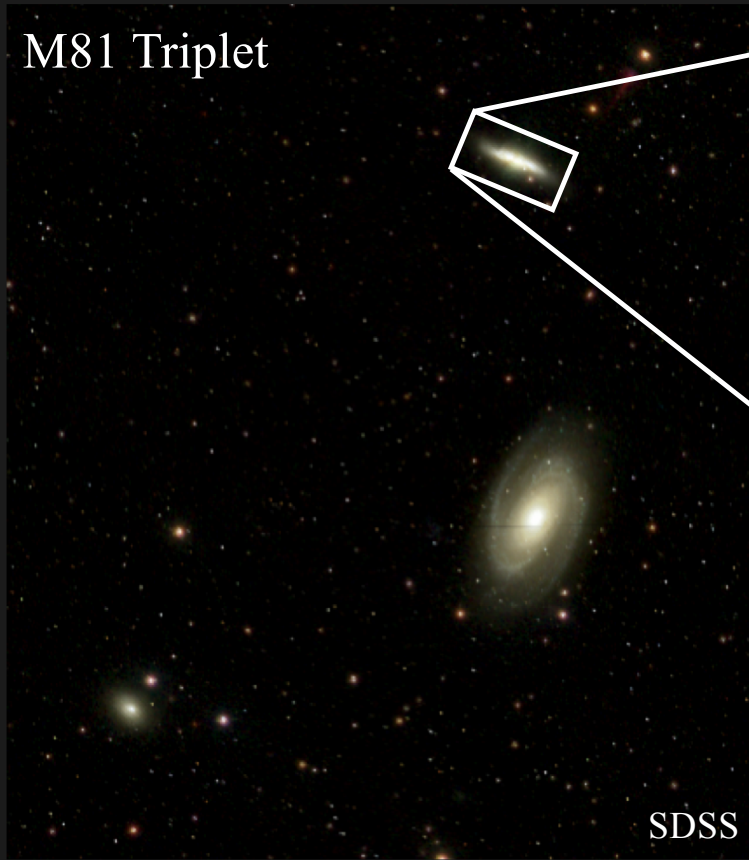
Pushing a New Frontier with JWST: The “Cigar” Galaxy, M82



Credit: Hubble Heritage, M. Mountain, STScI

Revealing M82's Stellar History with JWST

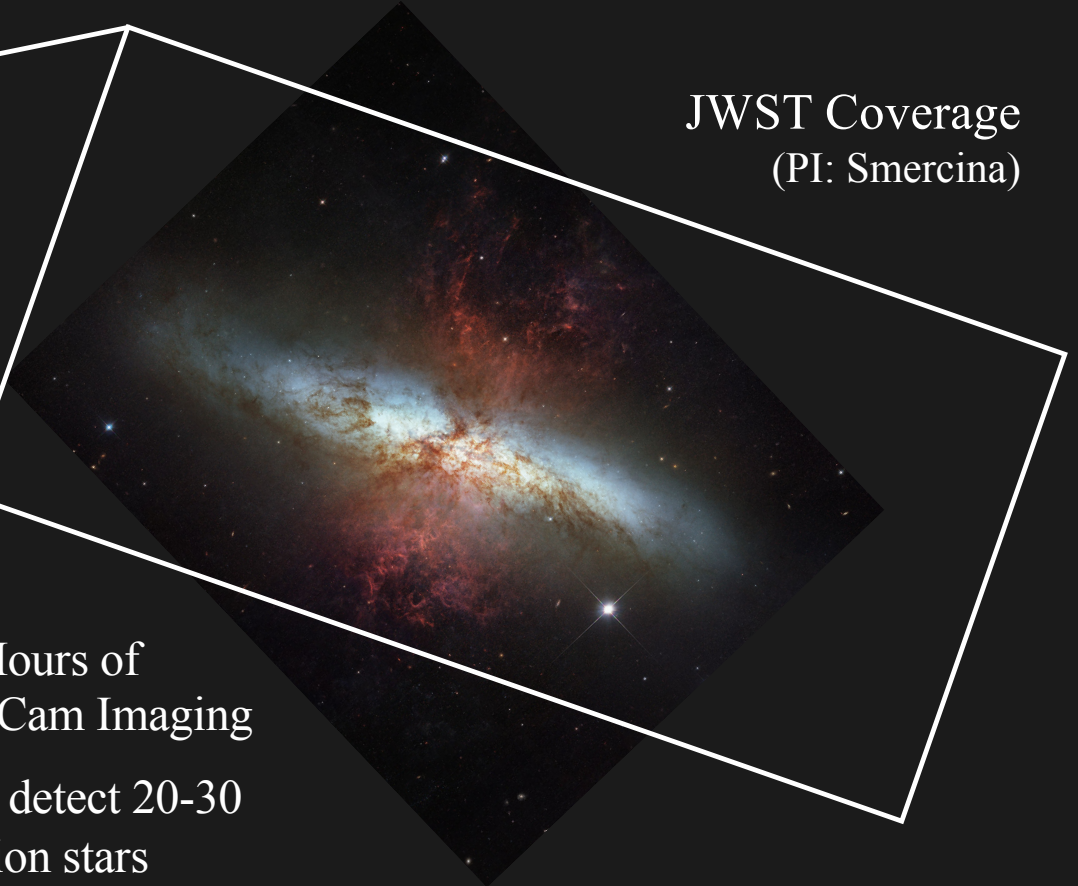
M81 Triplet



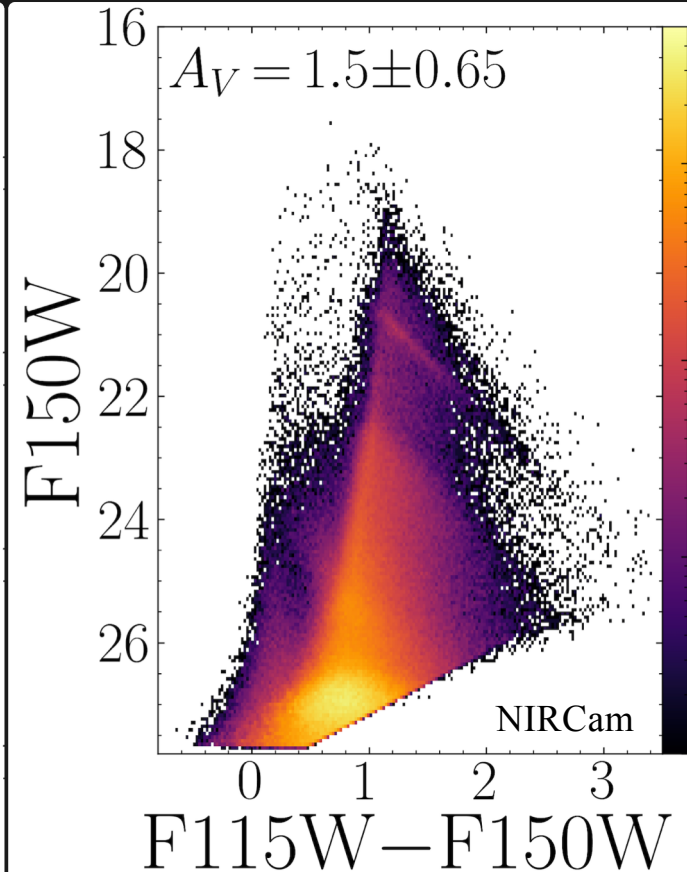
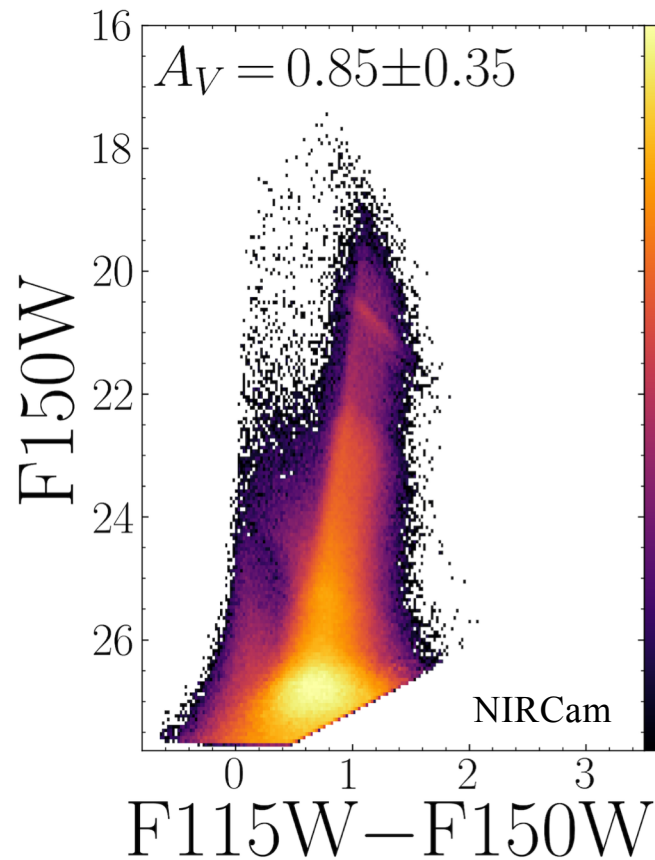
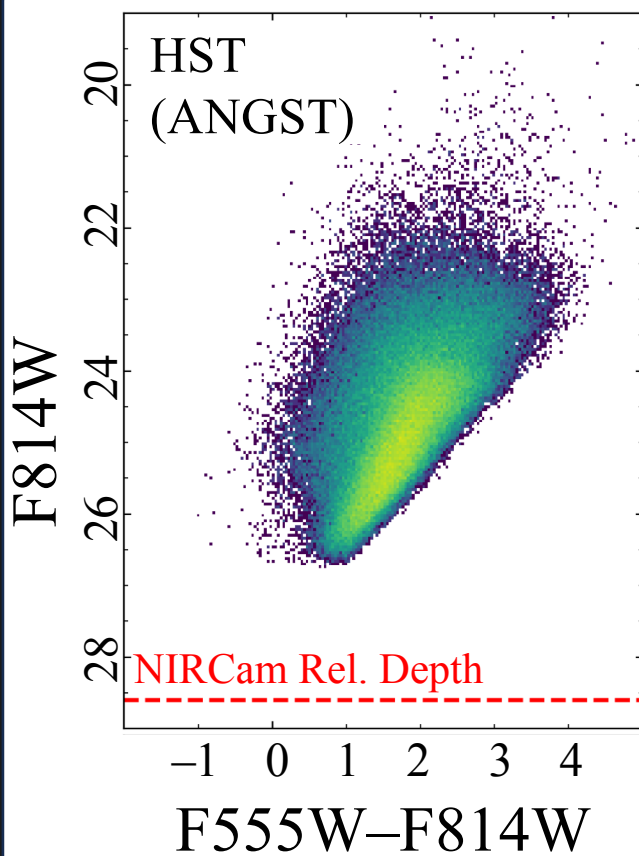
SDSS

JWST Coverage
(PI: Smercina)

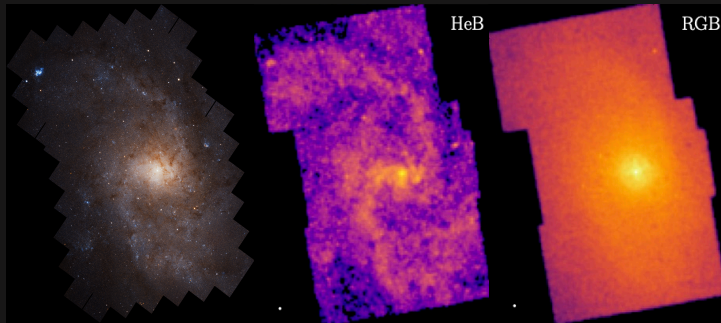
66 Hours of
NIRCam Imaging
Will detect 20-30
million stars



Expected Improvement in M82 with JWST

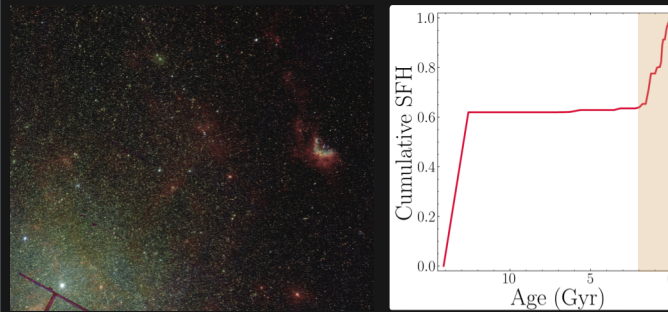


Summary: A New Frontier of Resolved Star Studies



Resolved star surveys reveal the evolutionary histories of galaxies.

e.g., PHATTER Survey of M33 with HST reveals hidden structure



JWST's improved resolution Reveals M33's Crowded Center

M33's Central SFH exhibits a period of "rejuvenation" in the past 2 Gyr



Leveraging JWST's resolution to advance into the nearby universe, e.g., a global survey of M82 with NIRCam