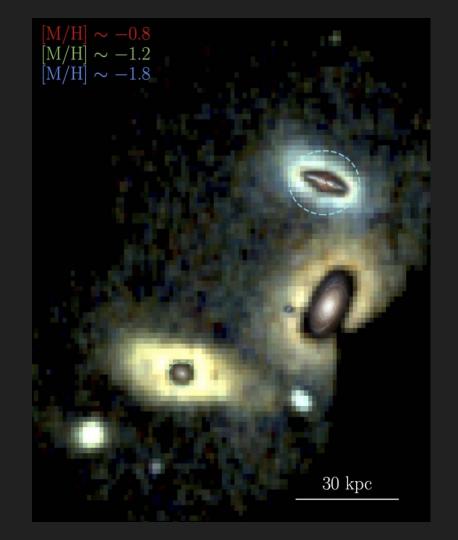
# The Outskirts of M82 and NGC 3077: A Timeline of the M81 Group

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# Why their Outskirts?

- Fossil records of galactic mergers
  - Fast, dramatic change to a galaxy
  - BH growth, changes in star formation rate, thicken or disrupt a disc
  - Understood through stellar halos and tidal streams
- This group is in the early stages of merging, giving insight into the past, present, and future of a massive merger event



# What do we already know about these galaxies and their outskirts?

### M81

- Largest of the group
- Old, small, metal poor-ish halo

#### M82

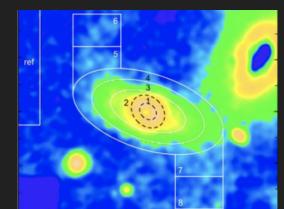
- Second largest of the group
- Starburst galaxy
- Halo properties are largely unknown

#### NGC 3077

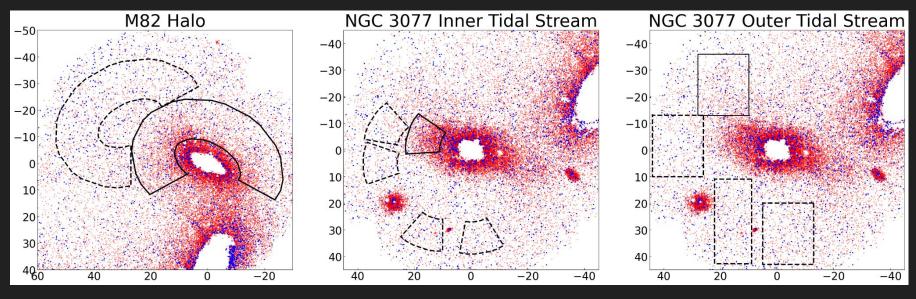
- Third largest
- Starburst galaxy
- Tidally disrupted
- No tail SFH measurements to date



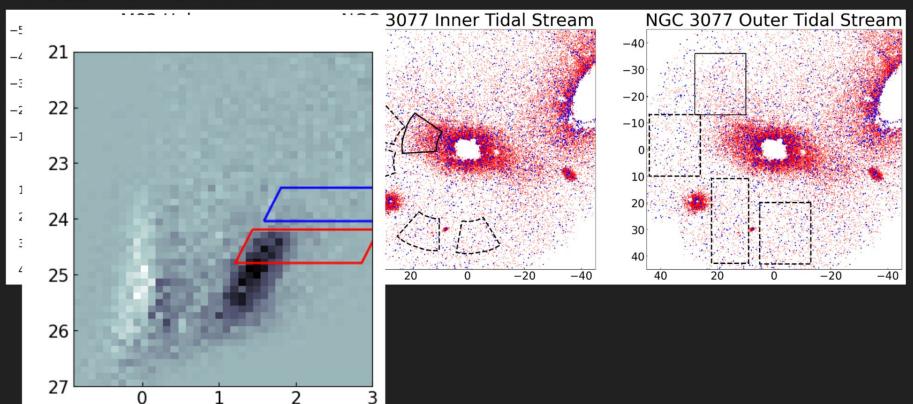




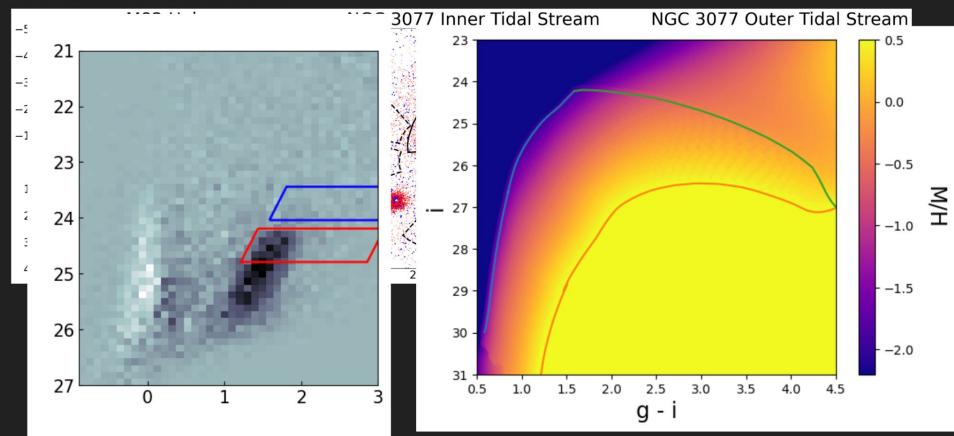
# What we Measure



# What we Measure



# What we Measure



## Results

	$N_{*,AGB}$	$N_{*,TRGB}$	$\log_{10}(\mathrm{N}_{*,AGB}/\mathrm{N}_{*,TRGB})$	t <sub>90</sub> (Gyr)	[M/H]
M82	$126 \pm 21$	$1990\pm50$	$-1.19 \pm 0.07$	$6.6 \pm 2.6$	$-1.56 \pm 0.40$
NGC 3077 (inner tidal stream)	$70 \pm 9$	$908 \pm 42$	$-1.11 \pm 0.06$	$5.7 \pm 2.4$	$-1.39 \pm 0.37$
NGC 3077 (outer tidal stream)	$16 \pm 6$	$140\pm54$	$-0.93 \pm 0.23$	$3.6 \pm 3.3$	$-1.54 \pm 0.37$

#### M82:

- Intermediate aged halo (~6.6 Gyr)
- Metal poor
- ~ 2 × 10^8 M☉
- This halo formed from the merger of a dwarf satellite 6.6 Gyr ago

#### NGC 3077:

- Minor age gradient along the tail
- Metal poor
- Stars in the tails are older than the tails themselves

