The C-19 Stellar Stream

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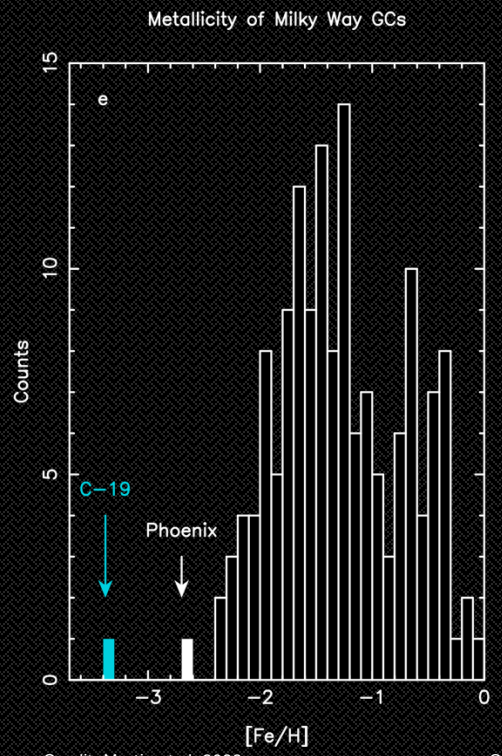
STATSTRO 2025

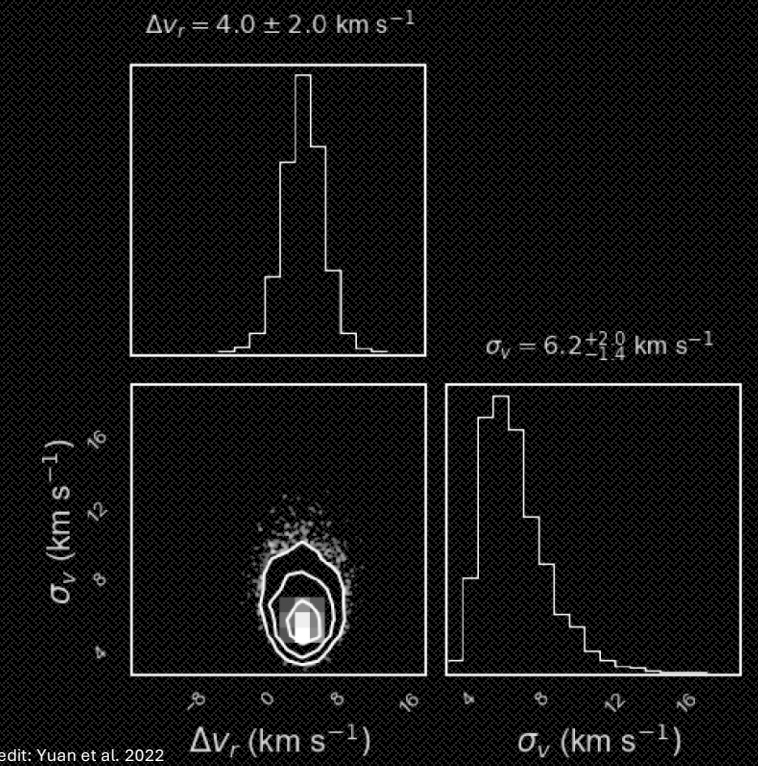
Credit: S5 Collaboration

- Milky Way (MW)-like galaxies grew through mergers of dwarf galaxies (DGs) and globular clusters (GCs)
- As DGs and GCs accrete onto the MW, they form stellar streams
- Stellar streams hold memories from interactions with dark matter substructure in the MW

- **The *most metal-poor*** GC population discovered is the C-19 stellar stream
- Its dynamics are difficult to reconcile with a GC-progenitor origin, more inline with DGs
- Recently found to extend >100 degrees in our sky
- We analyze C-19 using data from the Dark Energy Spectroscopic Instrument (DESI)
- We have the **largest sample** of C-19 member stars and can measure **line-of-sight velocities**



Credit: Martin et al. 2022



Credit: Yuan et al. 2022

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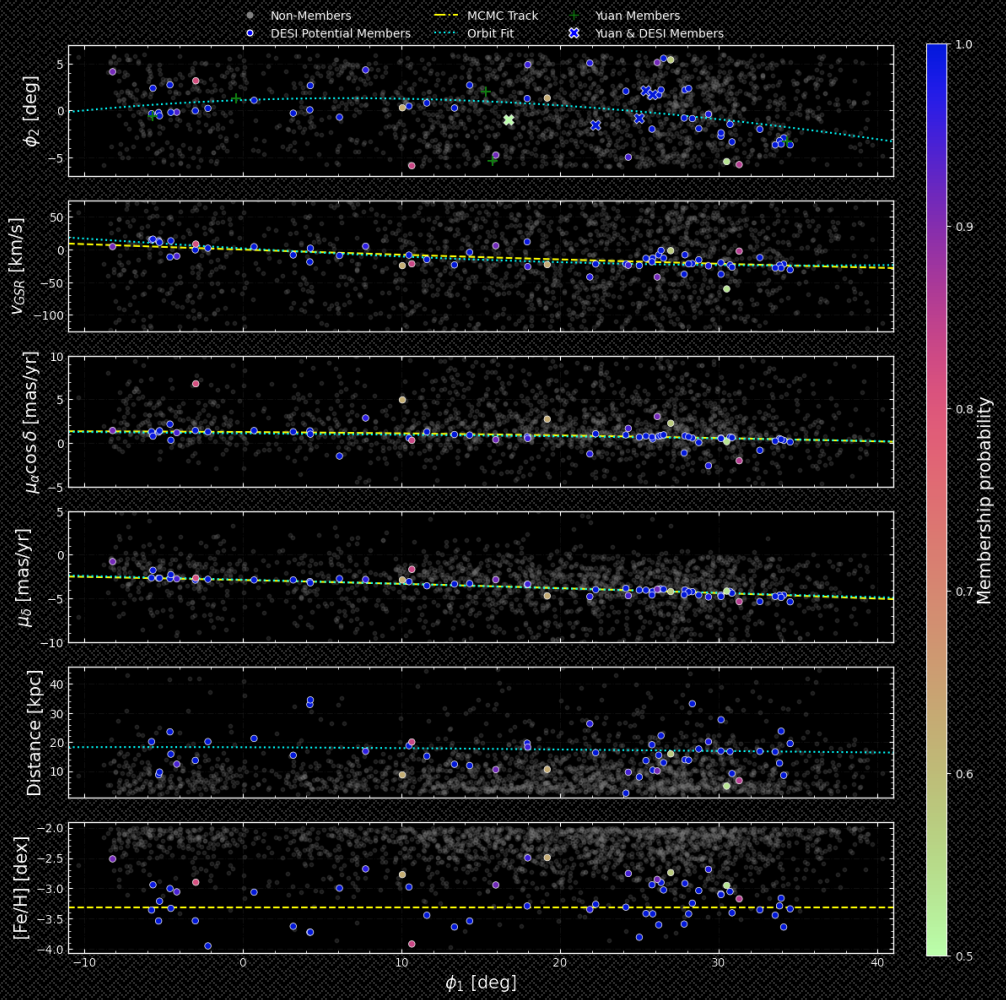
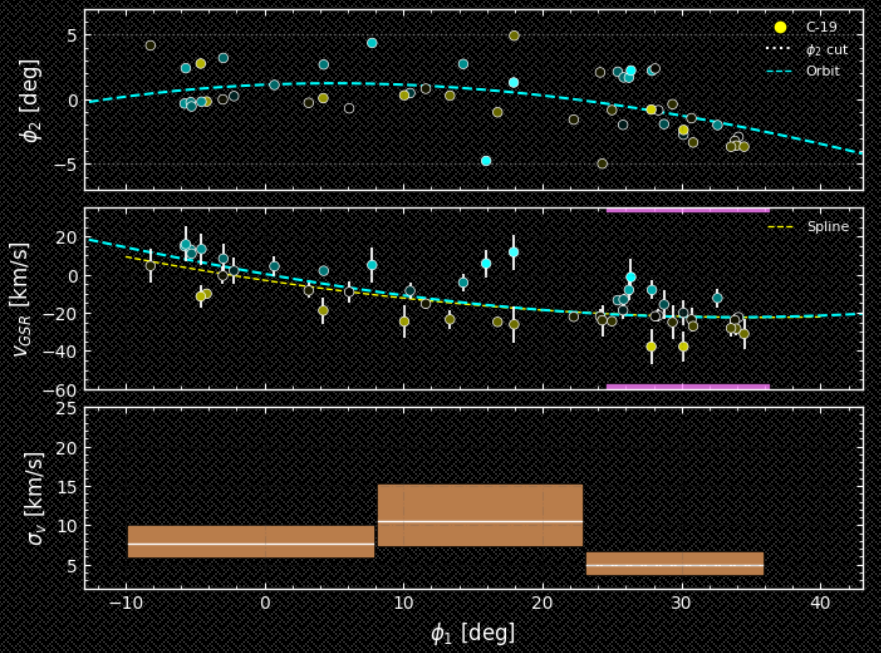
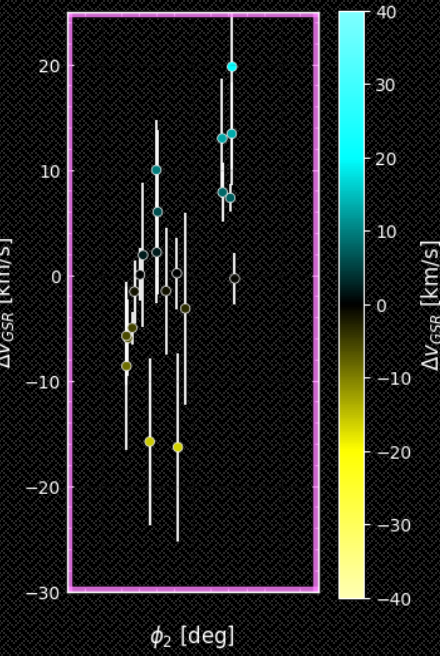
- Used 2-component finite mixture models
  - Separated ‘member’ stars from ‘background’ stars
  - Fit a spline track that varies along stream path







- We find 59 members of C-19, and identify a ‘spur’ feature indicative of substructure interactions
- We study how the velocity dispersion varies on- and off-spur
- Our methods reaffirm the chemical and kinematic properties of C-19 in current literature