Surveying the Giants: The Outer Extent of the Milky Way Halo

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The Goal:

- The halo is an aggregation of the MW accretion history
- What was this history like?
- What went into this process?
- How does this compare to other halos?
- Note: an aggregate profile does not mean “smooth halo”
The Challenge:

- Halo inside 35-40 kpc is well-studied. Abundant MSTO tracers.
- Beyond that, bright tracers are sparse and dominated by contaminants\(^1\).
- Solving this contamination problem requires more information

\(^1\) For single epoch, broad band surveys
Red - Blue Stragglers
Blue - Blue
Horizontal Branch

Deason et al. (2014)
The Challenge:

- Halo inside 35-40 kpc is well-studied. Abundant MSTO tracers.
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- Solving this contamination problem requires more information

¹. For single epoch, broad band surveys
Gravity-Sensitive DD051

(Majewski et al. 2000)
USNO 1.3m
3000 deg$^2$
\( \rho \sim r^\alpha \)

\[ \begin{align*}
\alpha &= -3.0 \\
\alpha &= -3.4 \\
\alpha &= -4.0
\end{align*} \]

\( 1.2 < g-i < 1.4 \)

\( 1.4 < g-i < 1.6 \)
Power law: -2.5, -3.5
Radius (kpc): 10, 40, 90
"Break radius" 25 kpc
This work: -3.4
What about Metallicity?

Not sensitive to assumed mean \([\text{Fe/H}]\).
Only steep gradients would affect result.

What about Substructure?

Not dependent on Sgr

You said “Shape” in the title?

We’re getting there; it’s oblate-ish
$r^{-3.4}$ out to 80-90 kpc
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