



Stellar Kinematics in the Bar of the Milky Way

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Discovery of the "long bar"

- 2005 GLIMPSE results
 - Size of the bar
 - Conclusions from data
 - Uncertainty in results
 - Biased view of observing
 - Reddening problems



Delving into theLong Bar

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- Searching for properties of the long bar
 - Finding the edges
 - Looking for distinct kinematics
- Use of Infrared photometrysurveys
 - Two Micron All Sky Survey
 - GLIMPSE I & II

2MASS

Long Bar Tracers

M-giants & Carbon Stars – Very Bright in the infrared



Long Bar Tracers

M-giants & Carbon Stars – Excellent tracers of the bar



Observing

- Cerro Tololo Interamerican Observatory
 - Data gathered over '07 and '08
 - Located in Chile
 - Single star spectroscopy
 - R ~ 5000
 - Ca Triplet (λ ~ 6500 9250Å)







Reducing& Analyzing Spectra



Radial (Doppler) Velocities

- Using the spectra taken
 - Requires a comparison image as well
- Different forms
 - Sun centered (V_{Helio})
 - Galaxy centered (V_{GSR})





Galactic Positioning



Velocity Vs. Latitude



No vertical trend present

Longitude Vs. Velocity



- A longitudinal trend is present
- Tighter distribution within positive velocities

Conclusions

- The bar seems to exists out to:
 - $-3^{\circ} \le b \le 3^{\circ}$
 - $-30^{\circ} \le I \le 30^{\circ}$
 - No evidence for transition from Bar to Disk yet
- The bar has a clear rotation to it
 - Has a unique pattern speed?
- A lack of evidence to support alarge scale heightbar

Where we go from here

- Completion analysis of current Data set
 Photometric distance comparisons
- Add in Additional datasets



 Theoretical simulations on galactic structure & dynamics

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- Benjamin et al. 2005, ApJ, 630:L149-L152
- Frinchaboy, P.M., & Majewski, S.R. 2008, AJ, 136:118-145