HI properties of galaxies in Ursa Major and Perseus-Pisces
the effect of the environment

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Scientific motivation

What is the influence of the environment on the HI content of galaxies?
Outline

• Ursa Major region
  – HI survey
  – Blind imaging mosaic
  – HI Mass Function

• Perseus-Pisces filament
  – HI survey
  – Blind imaging mosaic

• Future work

• Conclusion
HI imaging surveys of Ursa Major

- **Ursa Major region**
  - 17.4 Mpc
  - Dominated by late-types
  - No X-ray radiation

- **Targeted survey WSRT**
  - Complete sample $M_B < -16.8$
  - 56 galaxies

- **Blind survey VLA-D**
  - 54 pointings
  - 16% of volume
  - $\Theta = 45''$, $\Delta v = 10.3$ km/s, $\sigma \sim 0.4$ mJy/beam)
VLA imaging mosaic of Ursa Major

- 41 galaxies detected \((M_{\text{HI, min}} \sim 10^7 M_{\odot})\)
- Science goals:
  - Study HI morphology and kinematics
  - Slope of HIMF
HI mass function

- Galaxy formation and evolution
  - Slope quite different from theoretical prediction

- Environmental dependence

- Statistics:
  - HIPASS: 4,315
  - ALFALFA: 10,119
  - CVn: 70
  - Galaxy groups: 31

- Completion correction: \( \frac{V}{V_{\text{max}}} \) method
HIMF of the Ursa Major region

- HIMF of the Ursa Major region:
  - The slope is declining
  - Slope is quite different than HIPASS and ALFALFA

- Environmental dependence
Blind survey of the Perseus-Pisces filament

- Blind survey of part of the PP filament
- VLA-C ($\Theta \sim 15''$, $\Delta v \sim 20$ km/s, $\sigma \sim 0.8$ mJy/beam)
- 44 pointings
- $M_{\text{HI}, \text{min}} = 5 \times 10^8 \, M_{\text{sun}}$
- Expected $\sim 150$ galaxies
- 2x4 deg
Preliminary results from mosaic

Early-types with large HI disks
Future work

• Source finding and characterization
• Definitions of environments
• Compare the HI properties of galaxies in Ursa Major and Perseus-Pisces
• Compare to other environments like CVn, Virgo, and Coma
Conclusion
Thank you!

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