

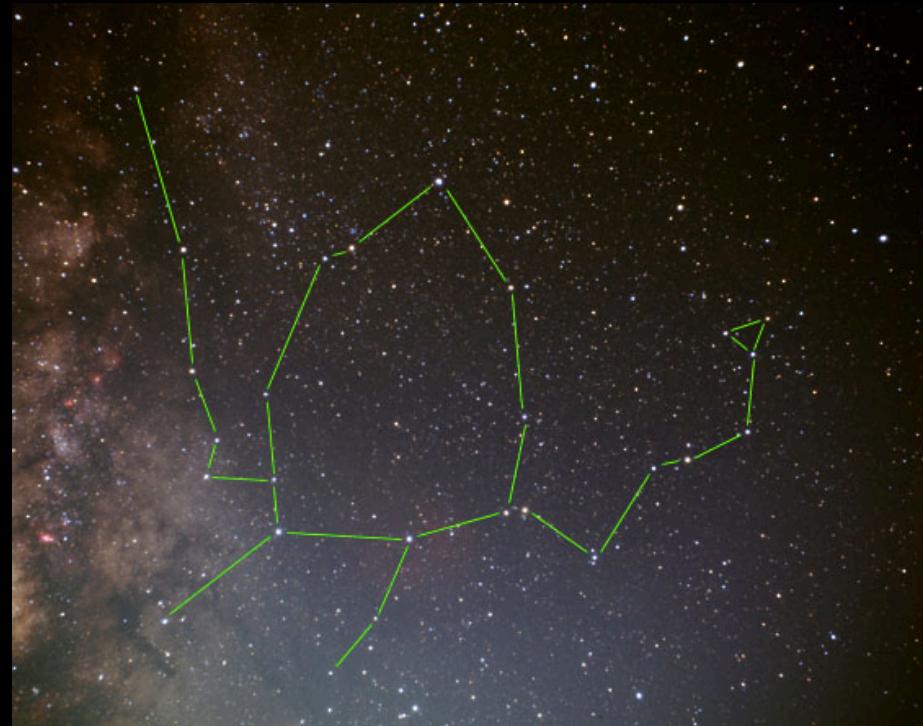
Mapping the North Polar Spur and its associated Expanding HI Shell

Team Darkstar

May 5, 2015

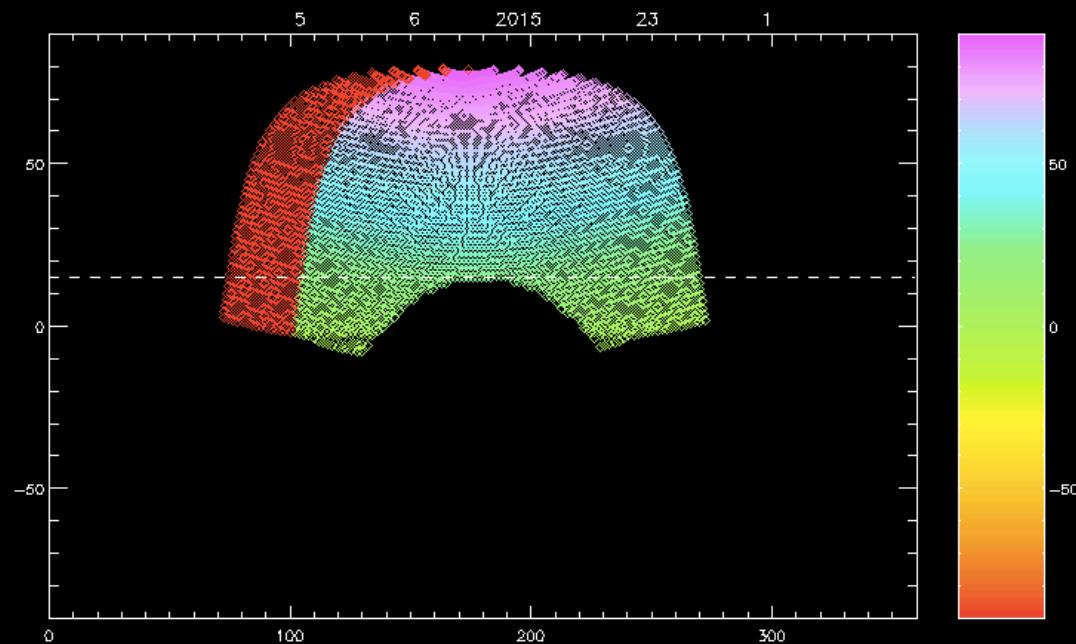
North Polar Spur

- Huge shell produced by several energetic stellar winds and supernovae located in the Scorpius - Ophiuchus association of stars



Mapping Area

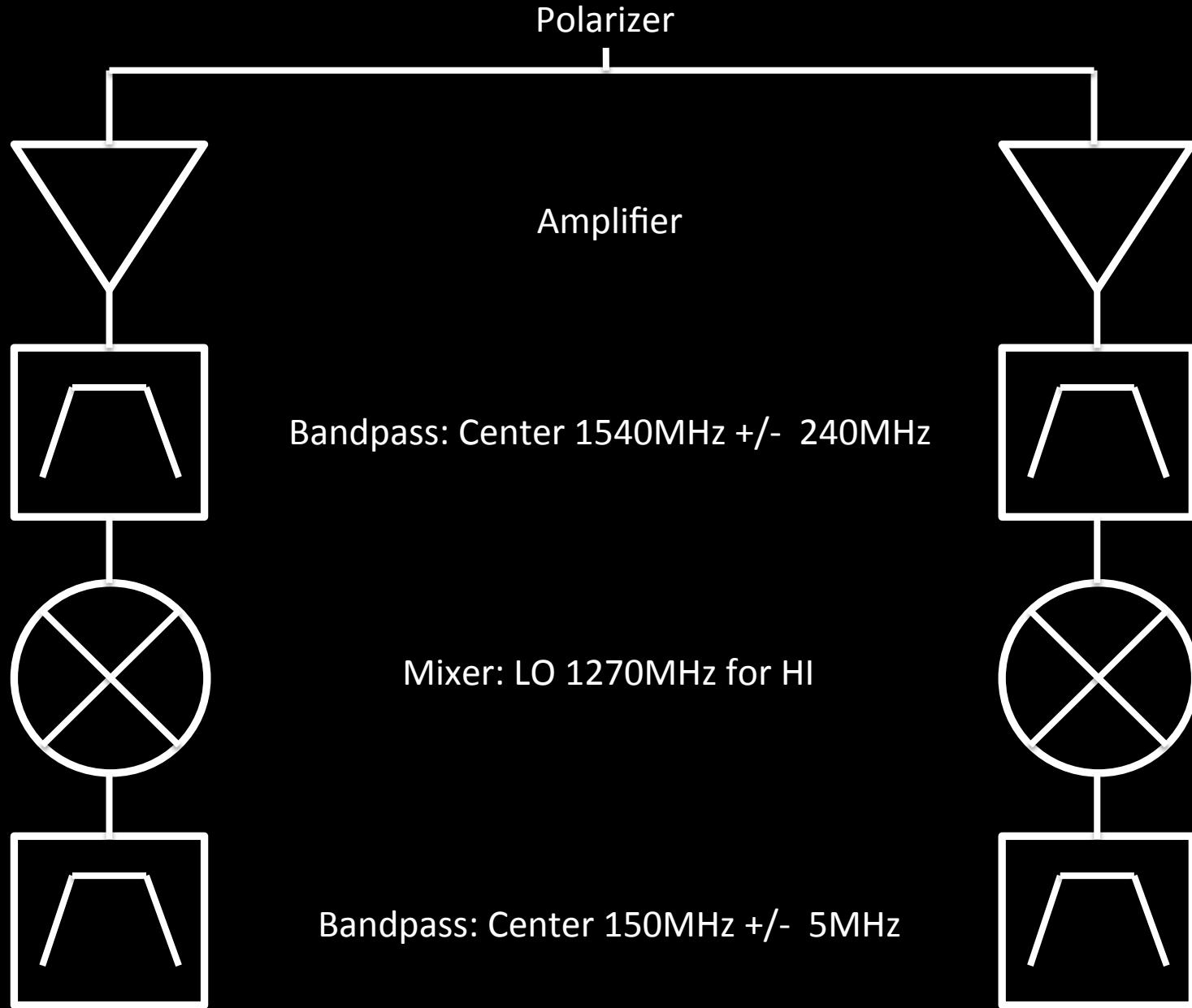
- map the shell in 3-D space of l, b, v
 - *galactic latitude, longitude, and velocity!*
- $l = 200^\circ \rightarrow 40^\circ$ $b = 0^\circ \rightarrow 90^\circ$



Leuschner Observatory



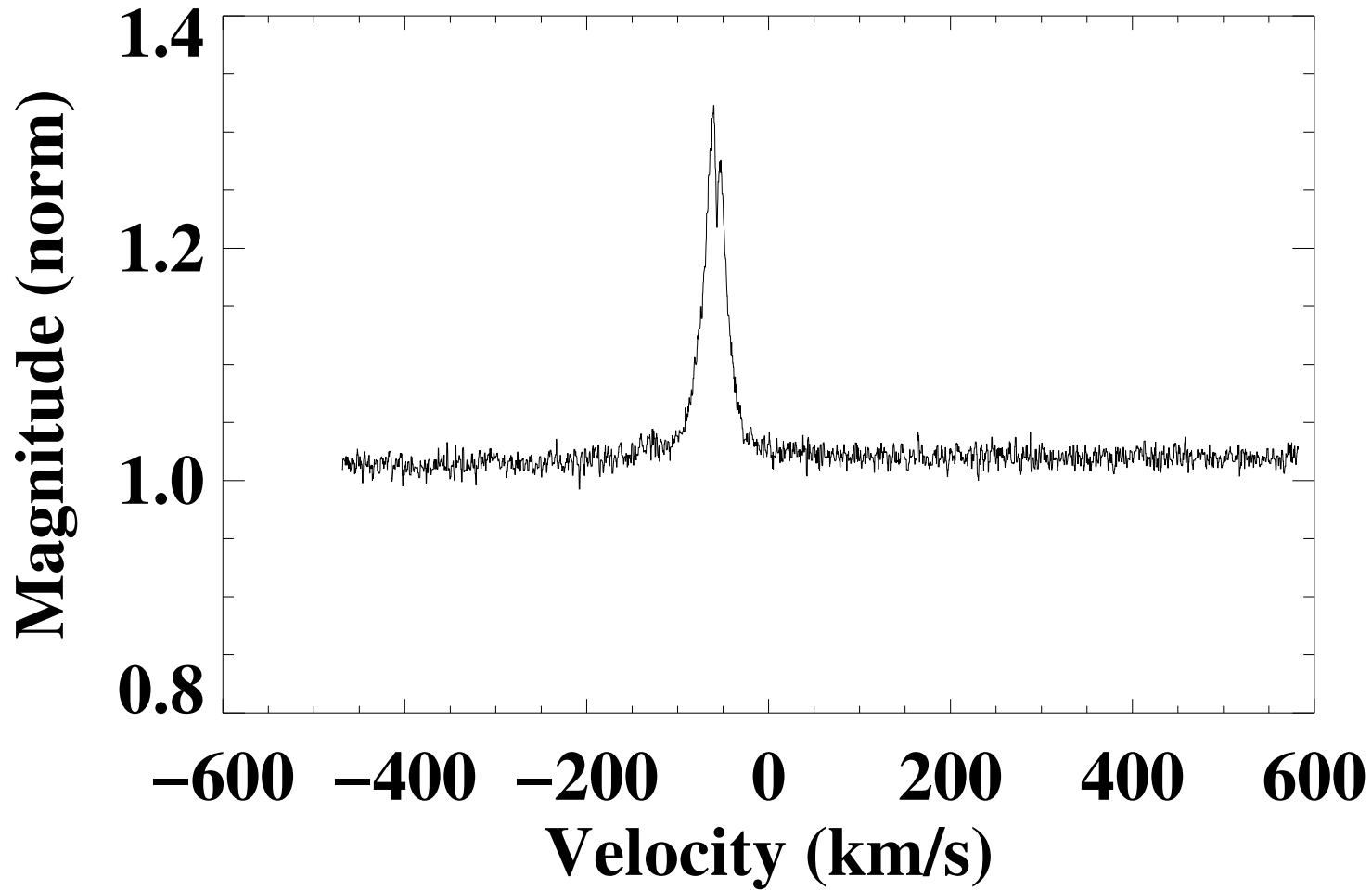
Receiver Diagram



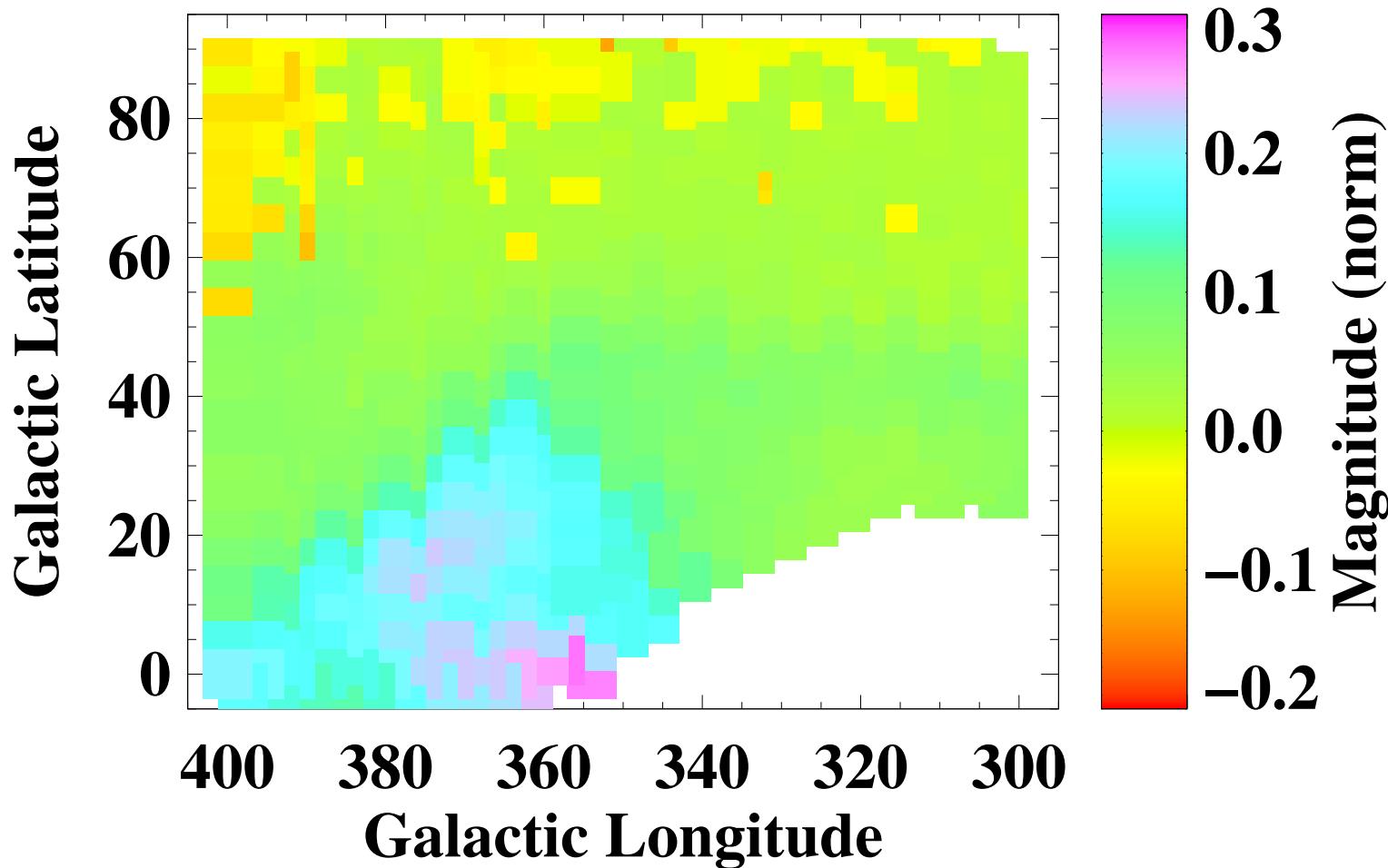
Procedure

- Fit a Gaussian to each peak to calculate magnitude and center velocity
- Fit a double Gaussian to measure distance between two peaks
- Plot vs Location!

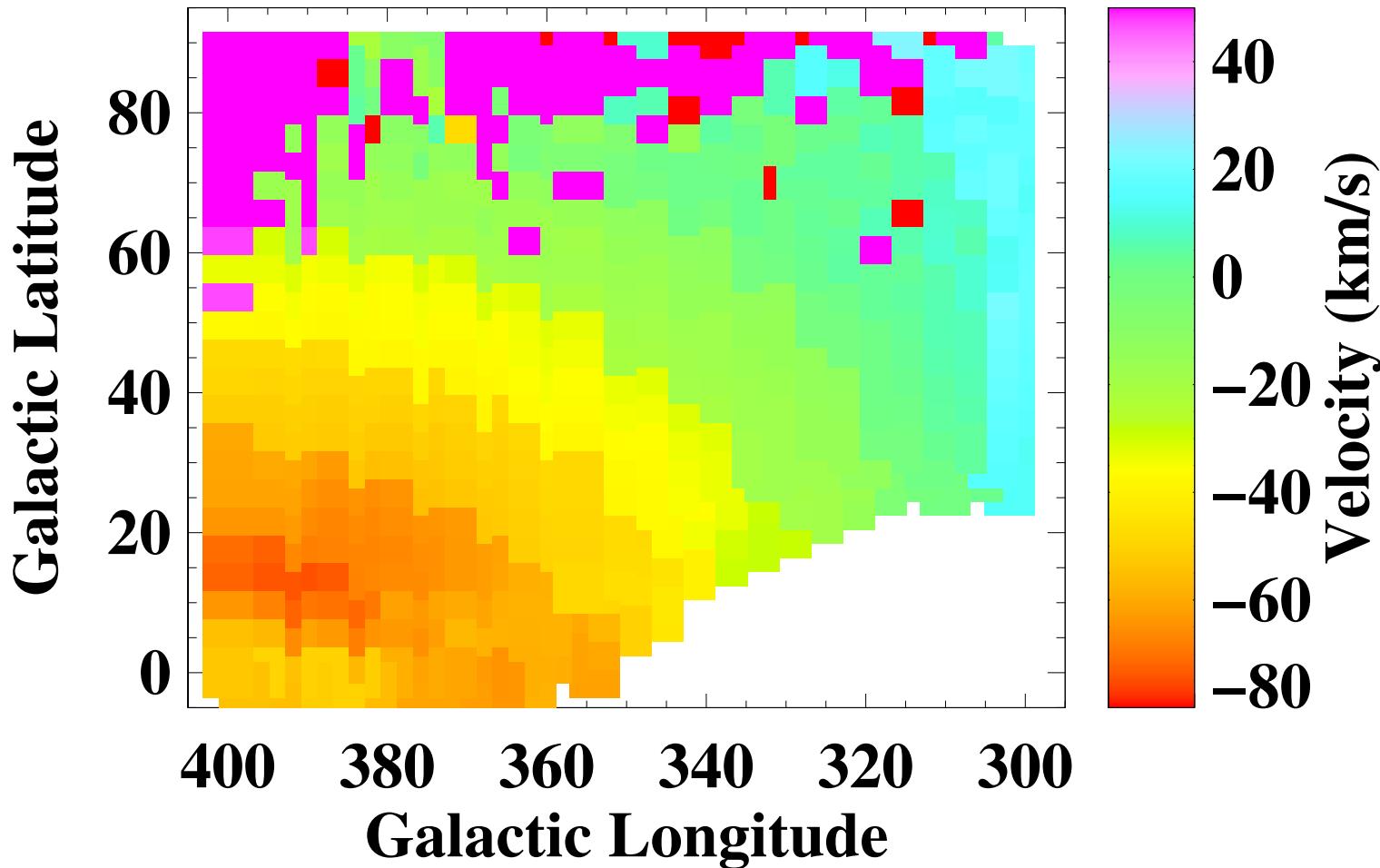
Velocity Calibration



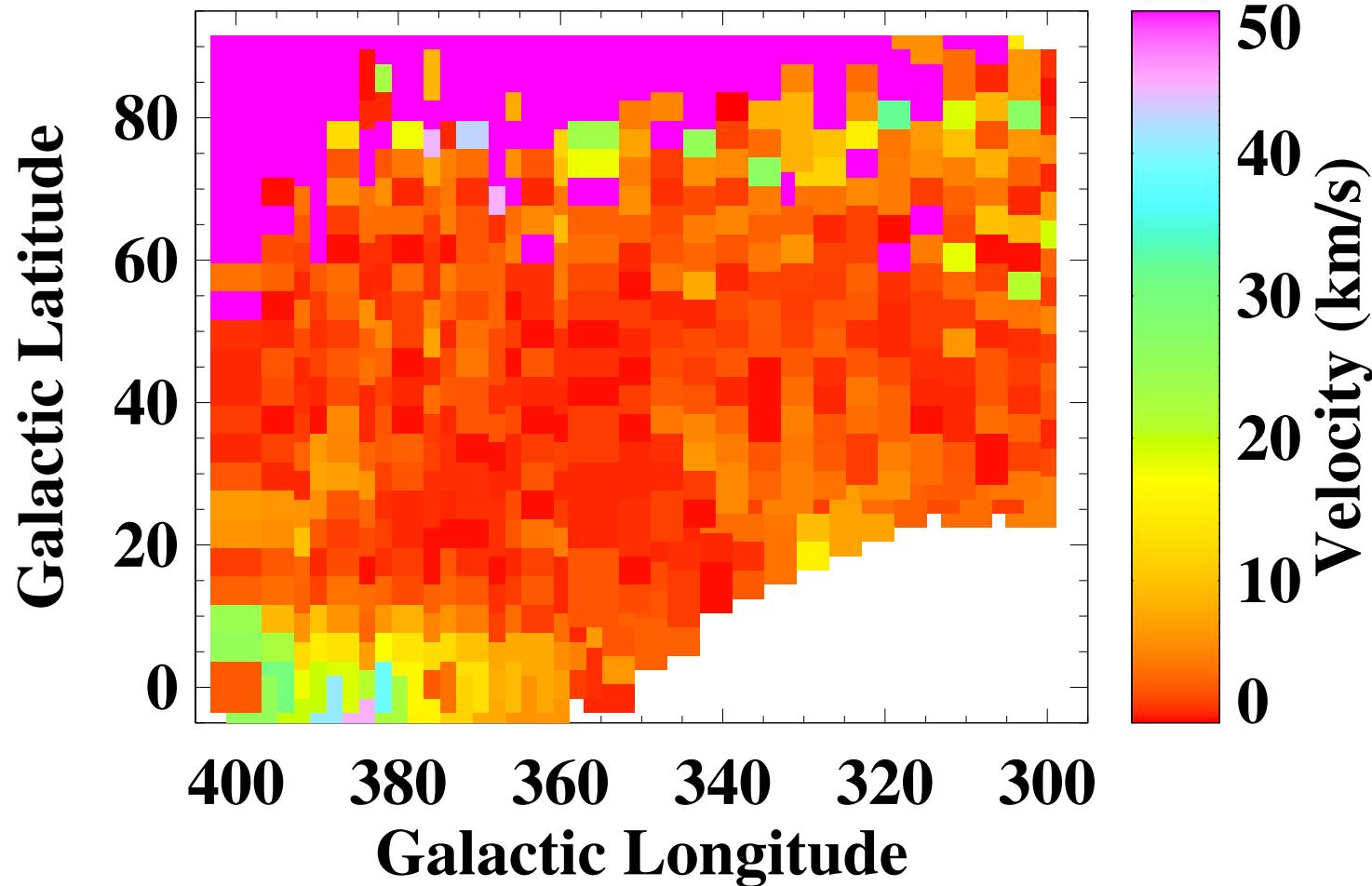
Magnitude vs Location



Velocity vs Location



Peak Separation vs Location



Stepping Through Velocities

- animation will show in IDL!