The Monoceros Ring: the evidence and possible solutions

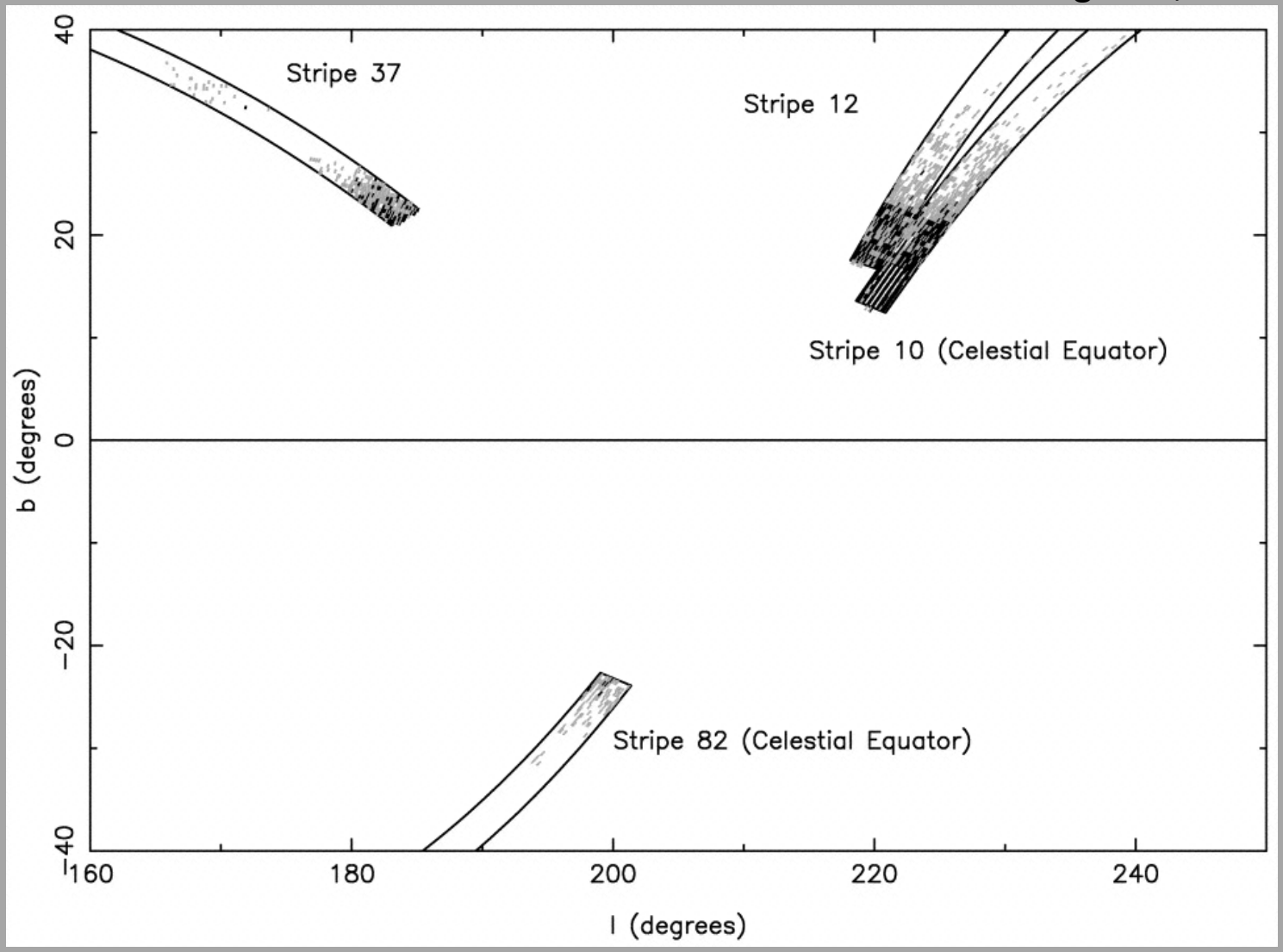
Blair Conn
ESO Fellow

Who am I? – Blair Conn

- PhD from
- The University of Sydney, 2006
- ESO Fellow
- 2p2/Wide Field Imager
  Instrument Scientist
- bconn@eso.org

Discovery of the Monoceros Ring in SDSS data

Newberg et al, 2002



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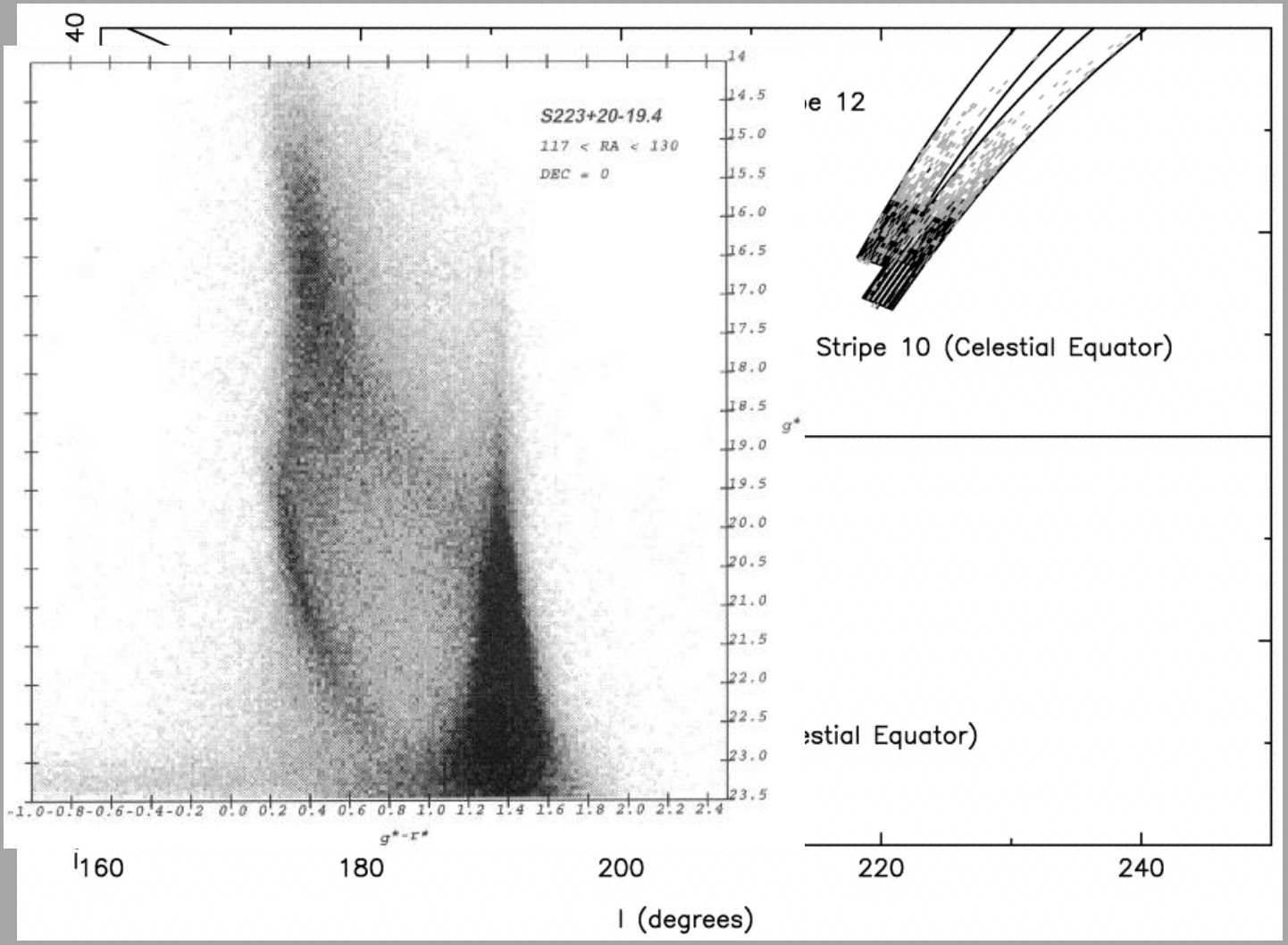
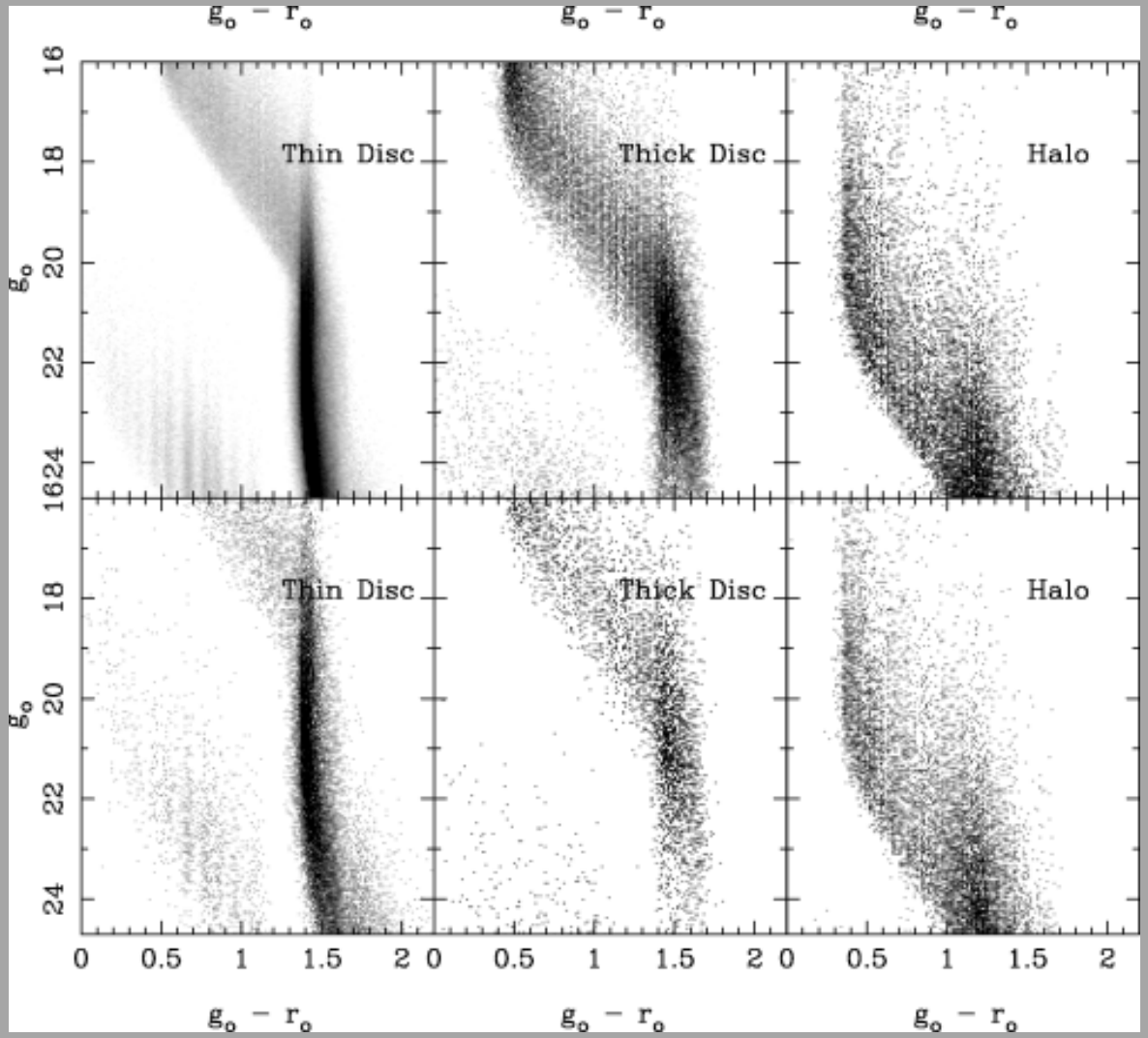
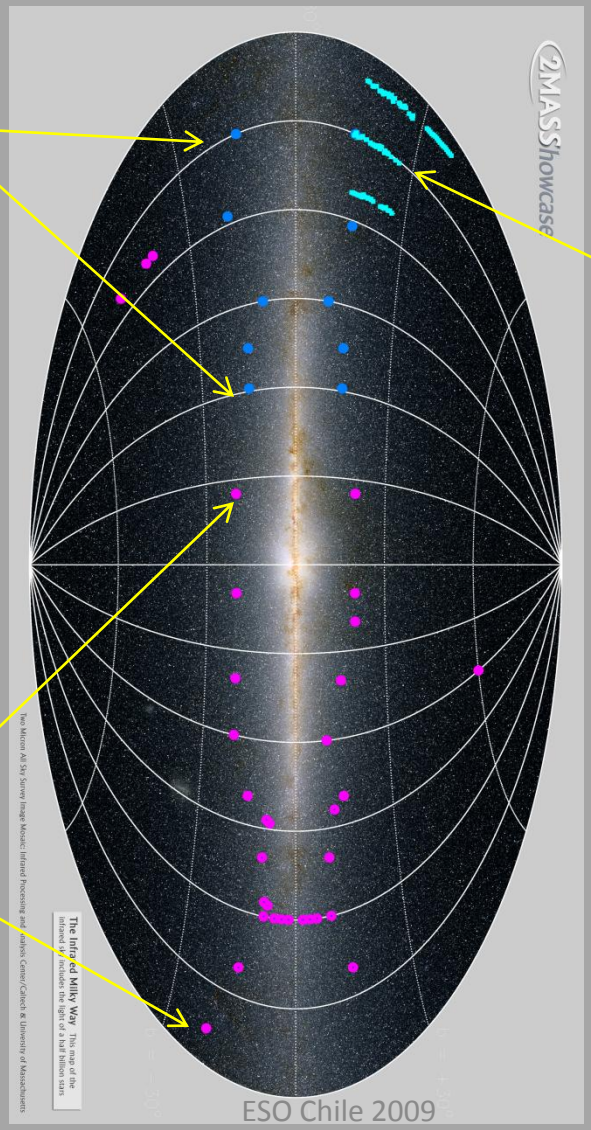


Searching for the Monoceros Ring



Surveying the Monoceros Ring



INT/WFC

SUBARU/SUPRIMECAM

AAT/WFI

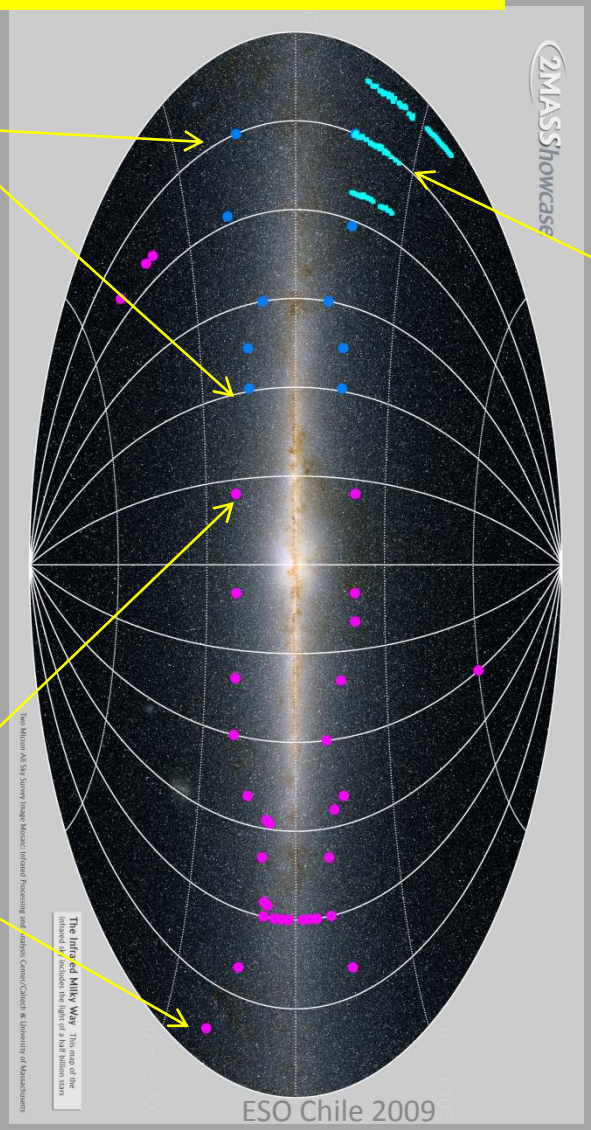
ESO Chile 2009

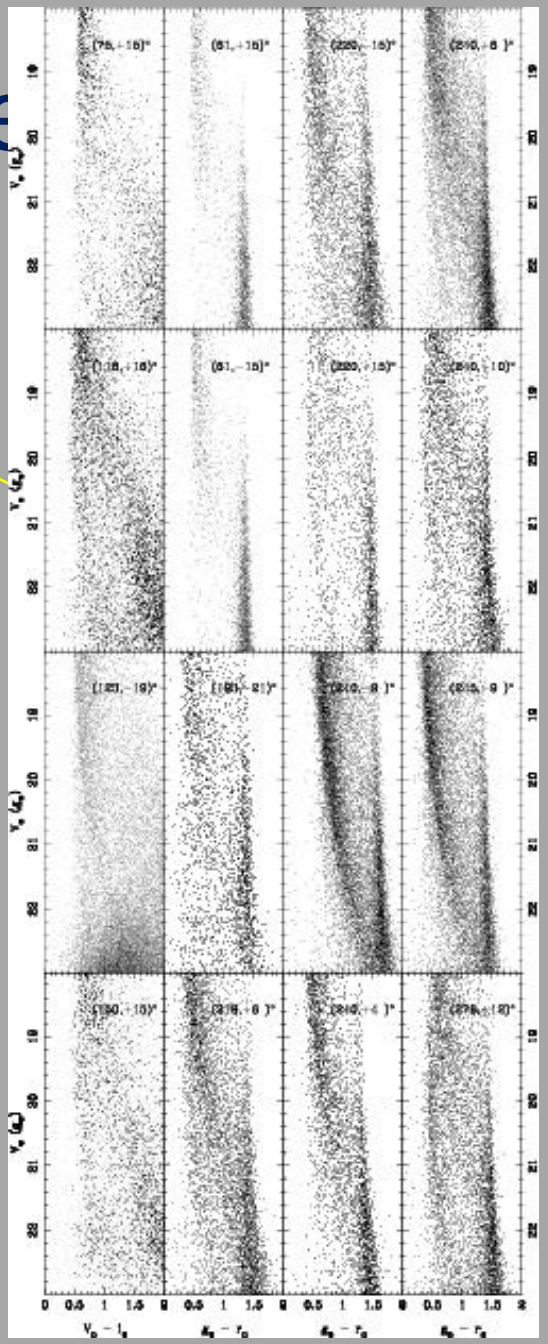
So what did we find .... ? oce

INT/WFC

14 detections
+3 maybes

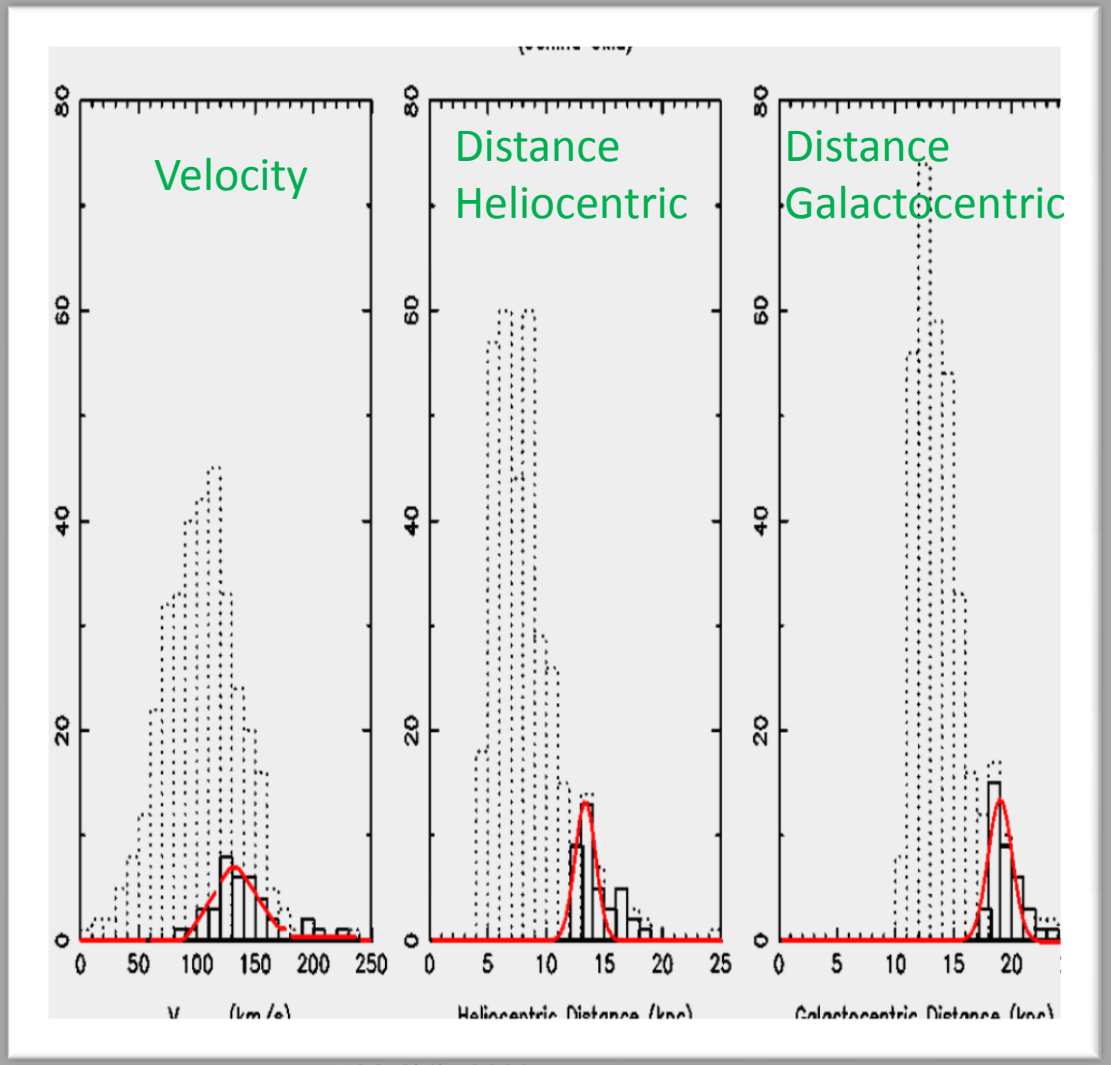
AAT/WFI





Using Radial Velocities

AAT/2dF



Properties of the Monoceros Ring

- Dense grouping of stars at a specific distance
- Large extent on the sky
- Narrow velocity dispersion

What are the options for the Monoceros Ring?

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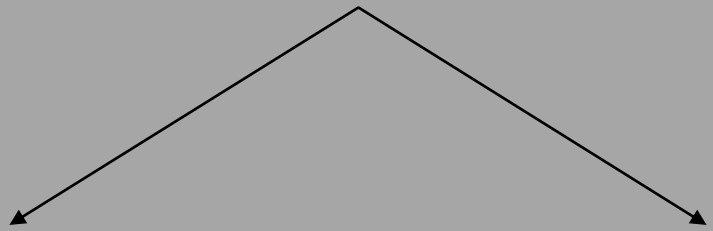
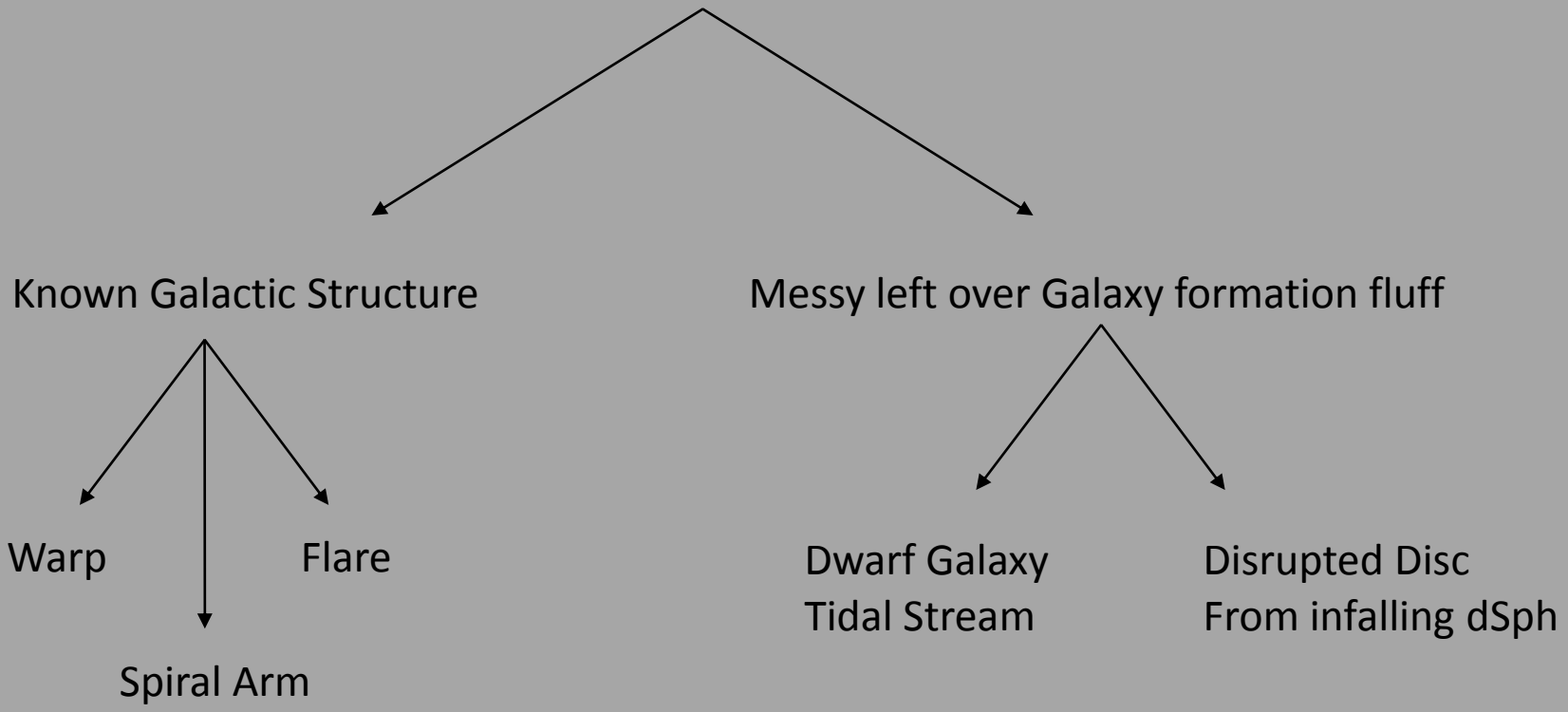


Known Galactic Structure

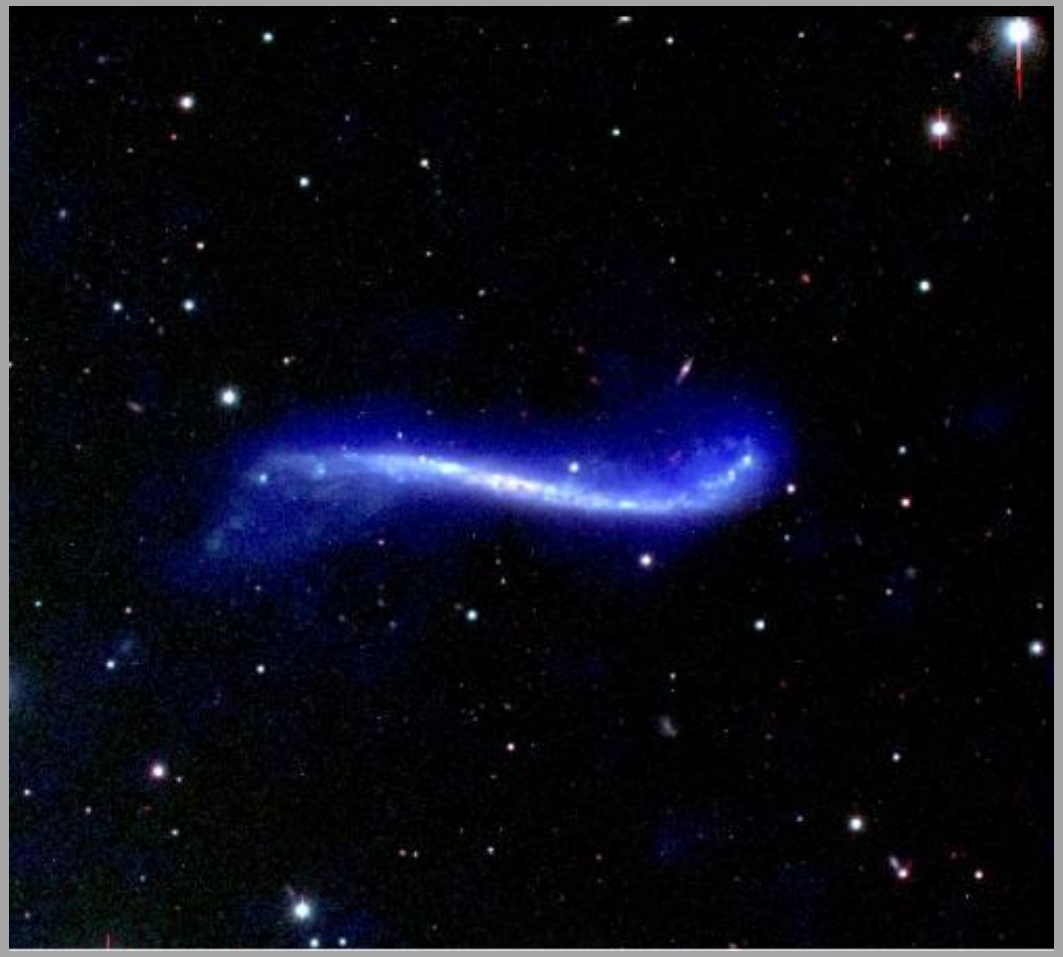
Messy left over Galaxy formation fluff

What are the options for the Monoceros Ring?



Warp

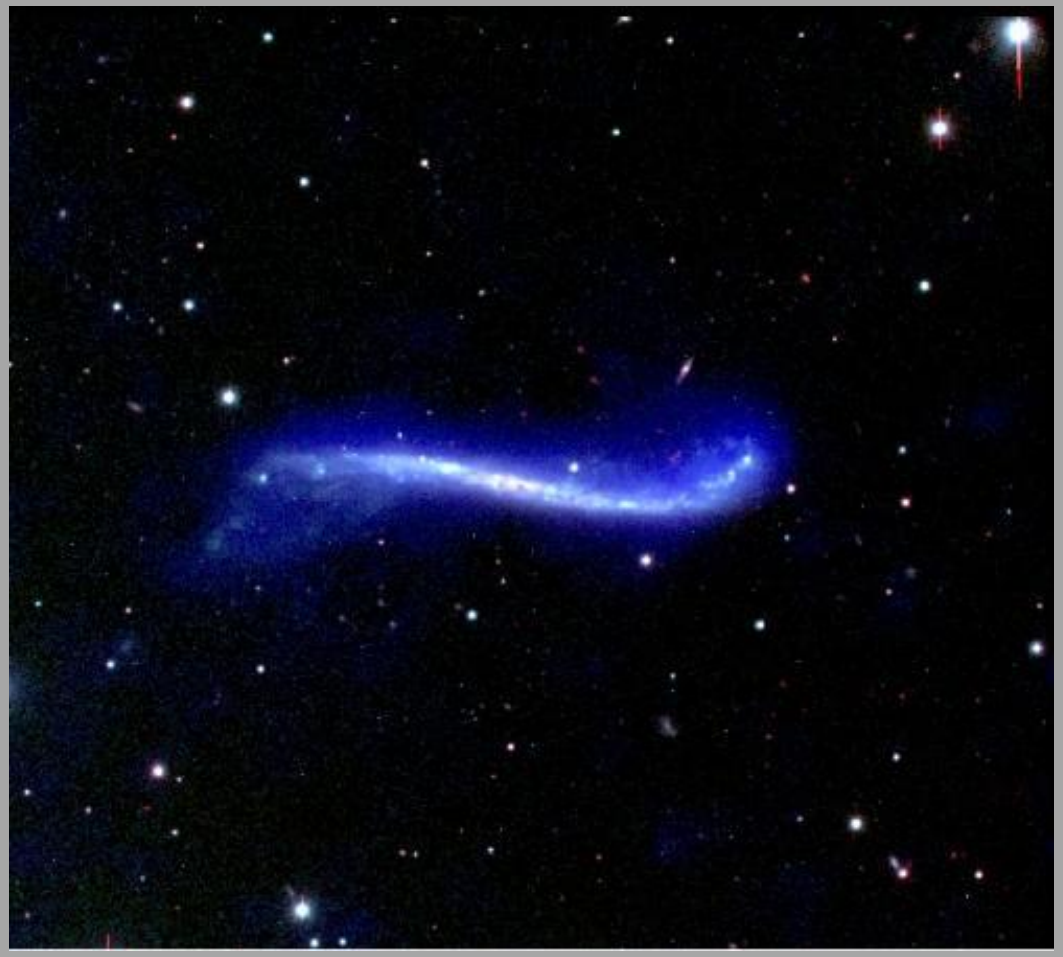
Let's take an extreme example



UGC 3697

Warp

The argument goes that the Canis Major overdensity, the purported progenitor of the Monoceros Ring is simply the shifted midplane of the Galaxy.



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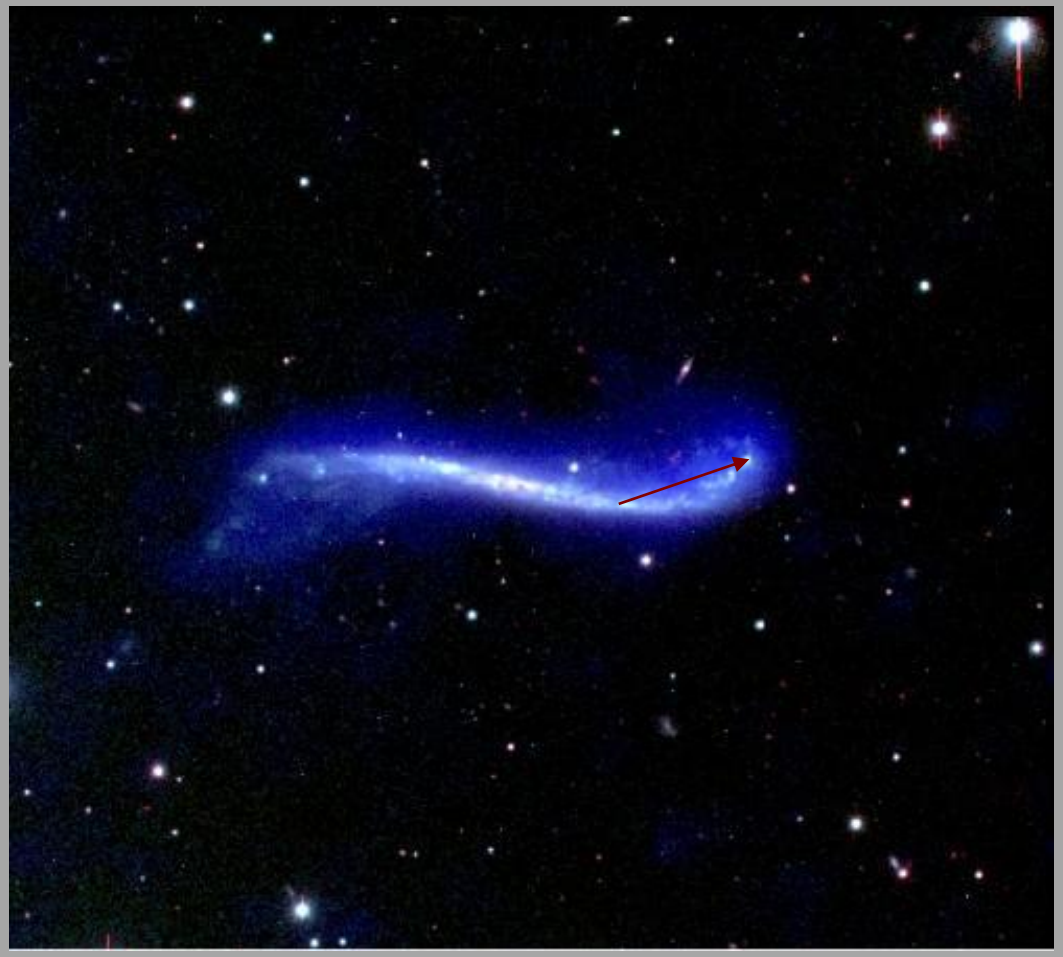
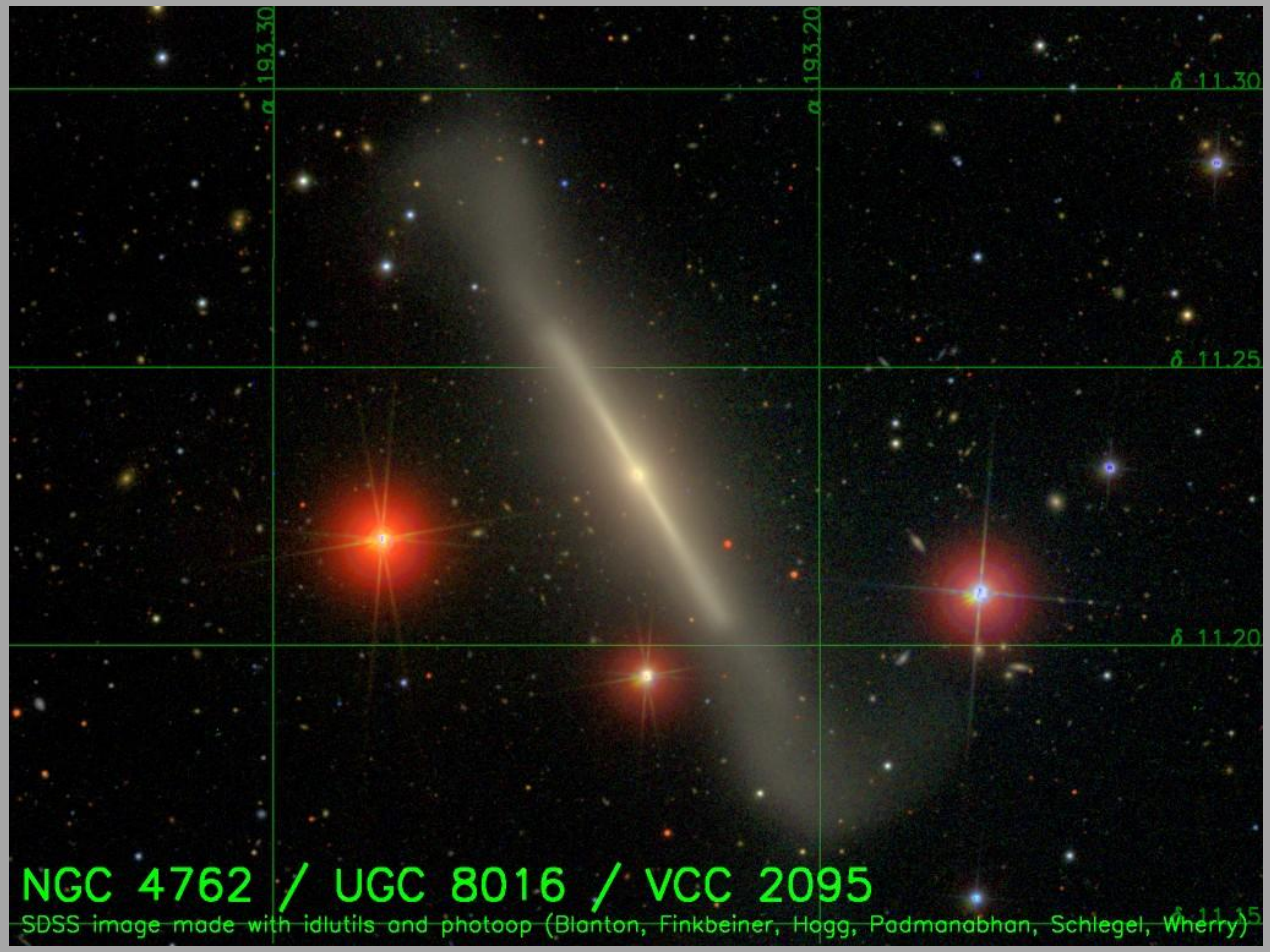


UGC 3697

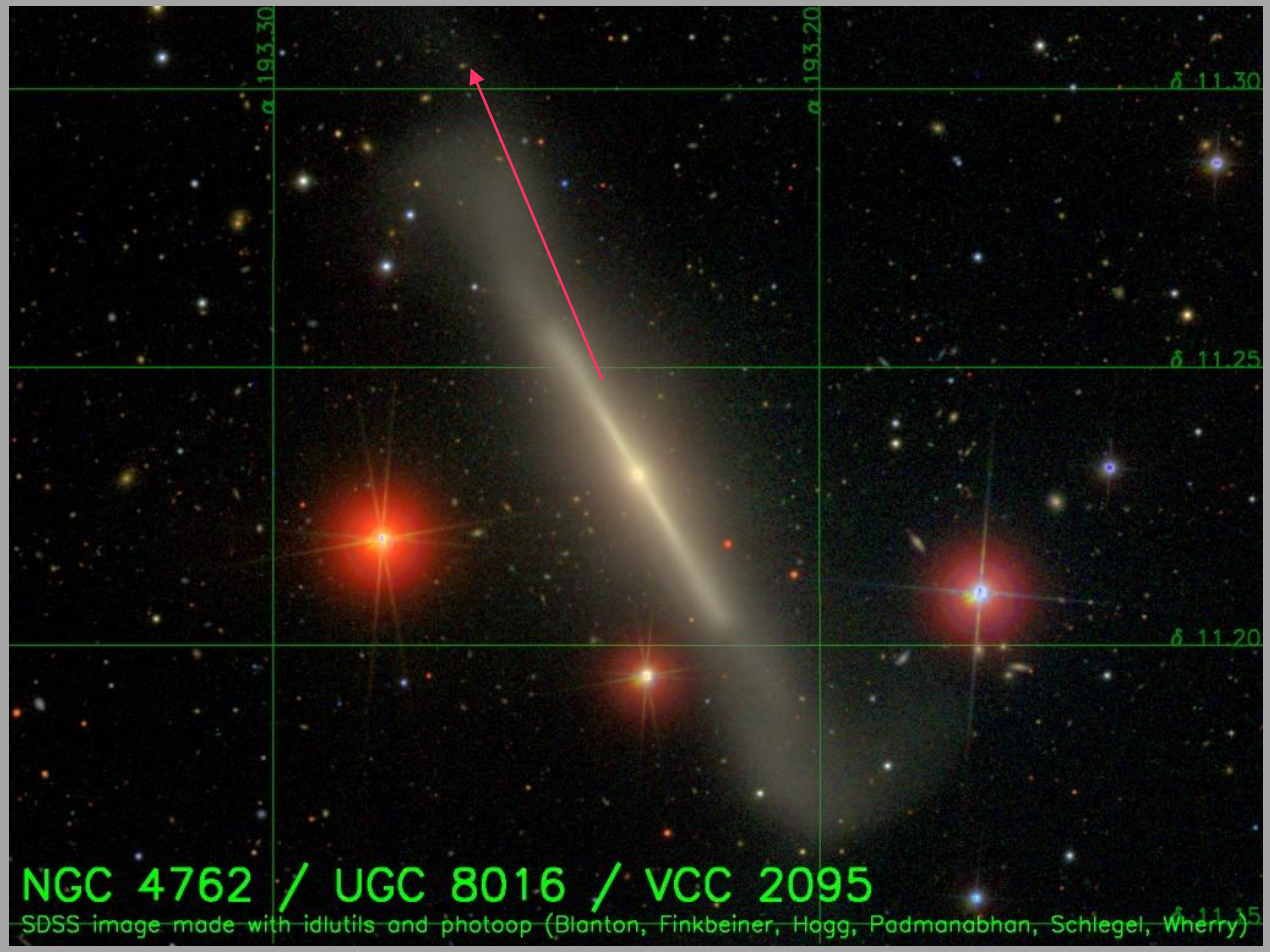
Flare

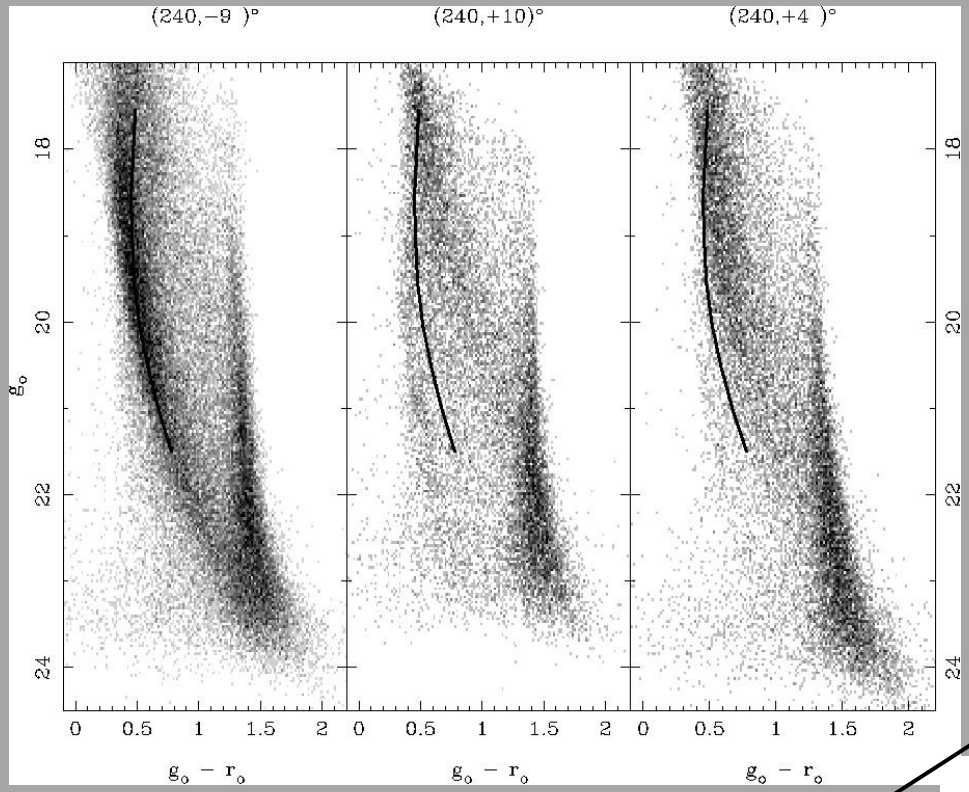
The Monoceros Ring as the Flare, follows the same logic as the Warp scenario.

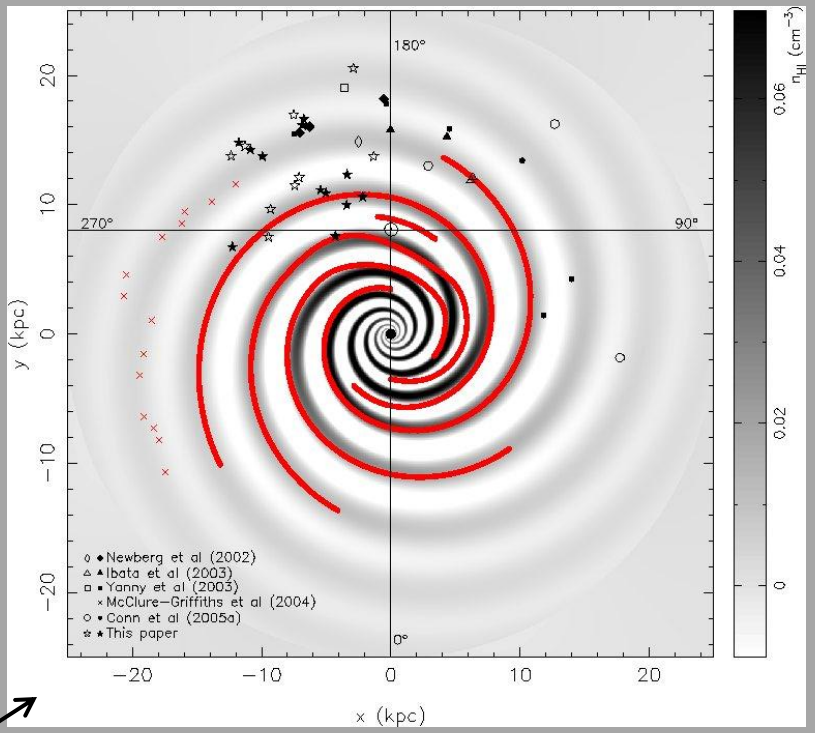


Flare

So the Monoceros Ring appears like this.



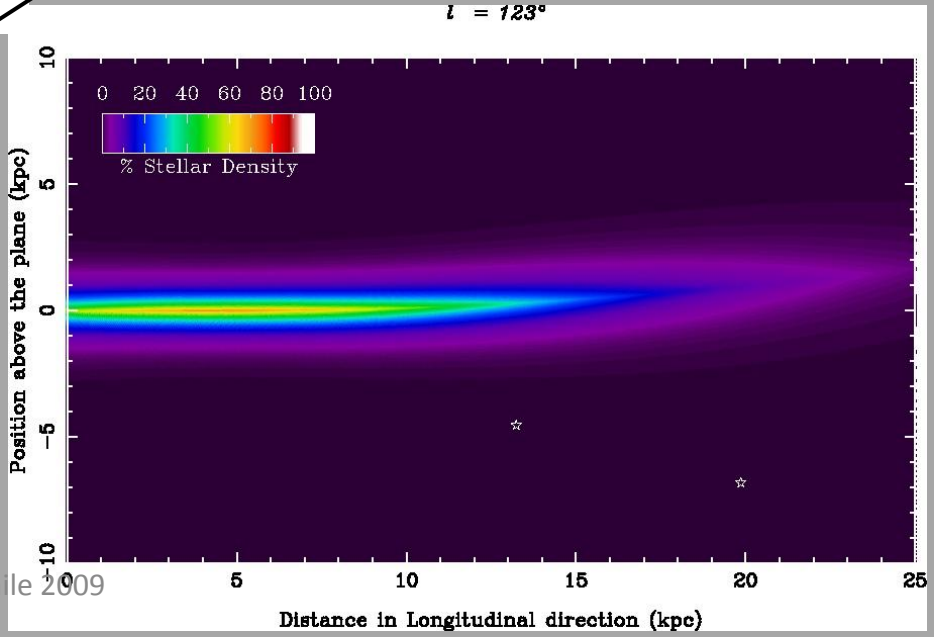




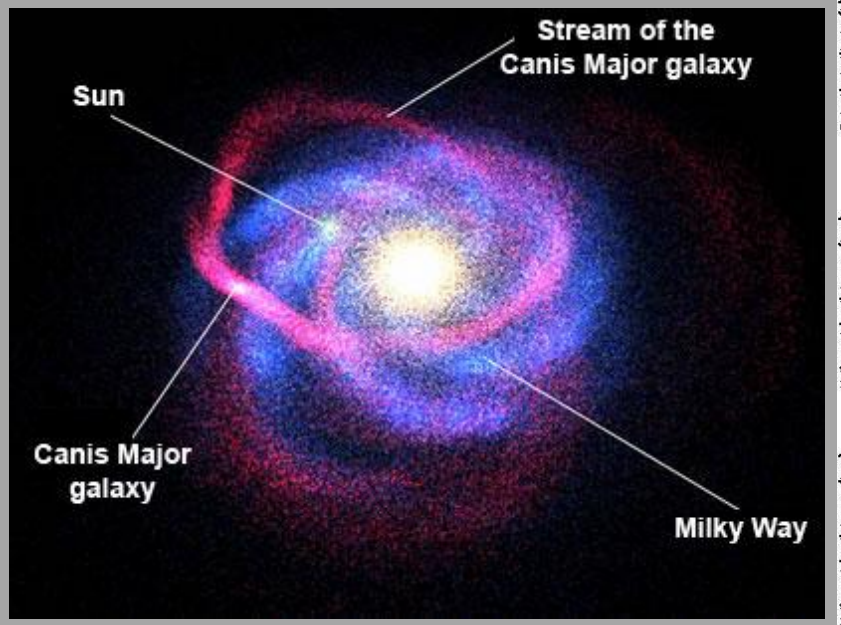
Warp

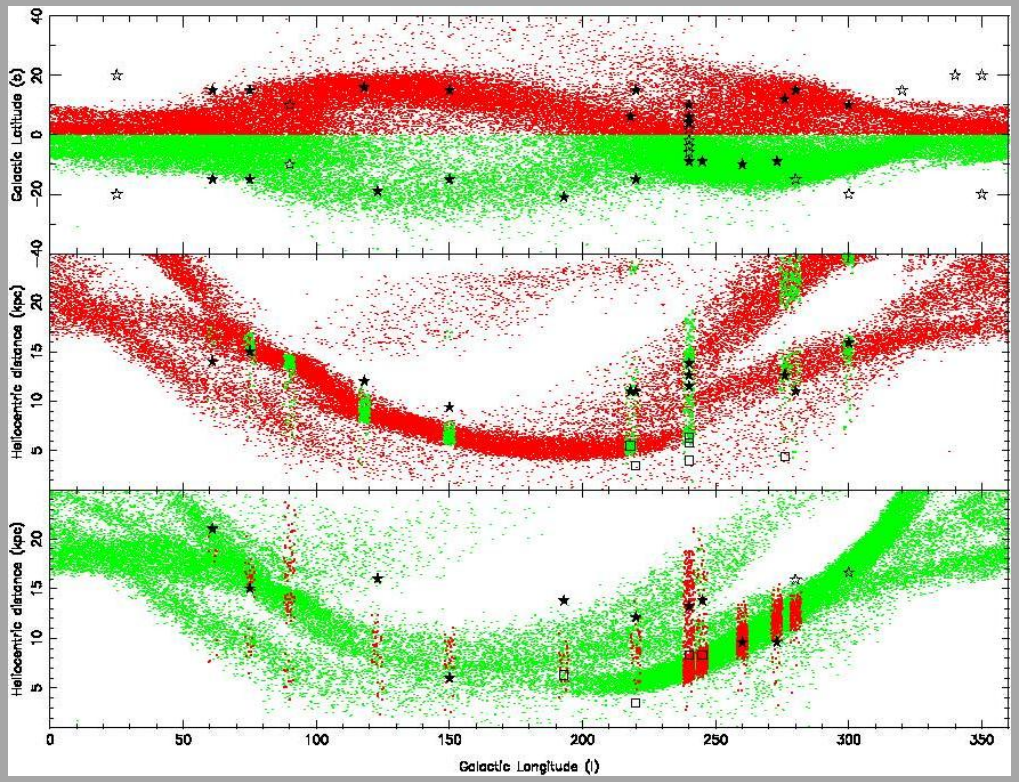
Spiral Arm

Flare

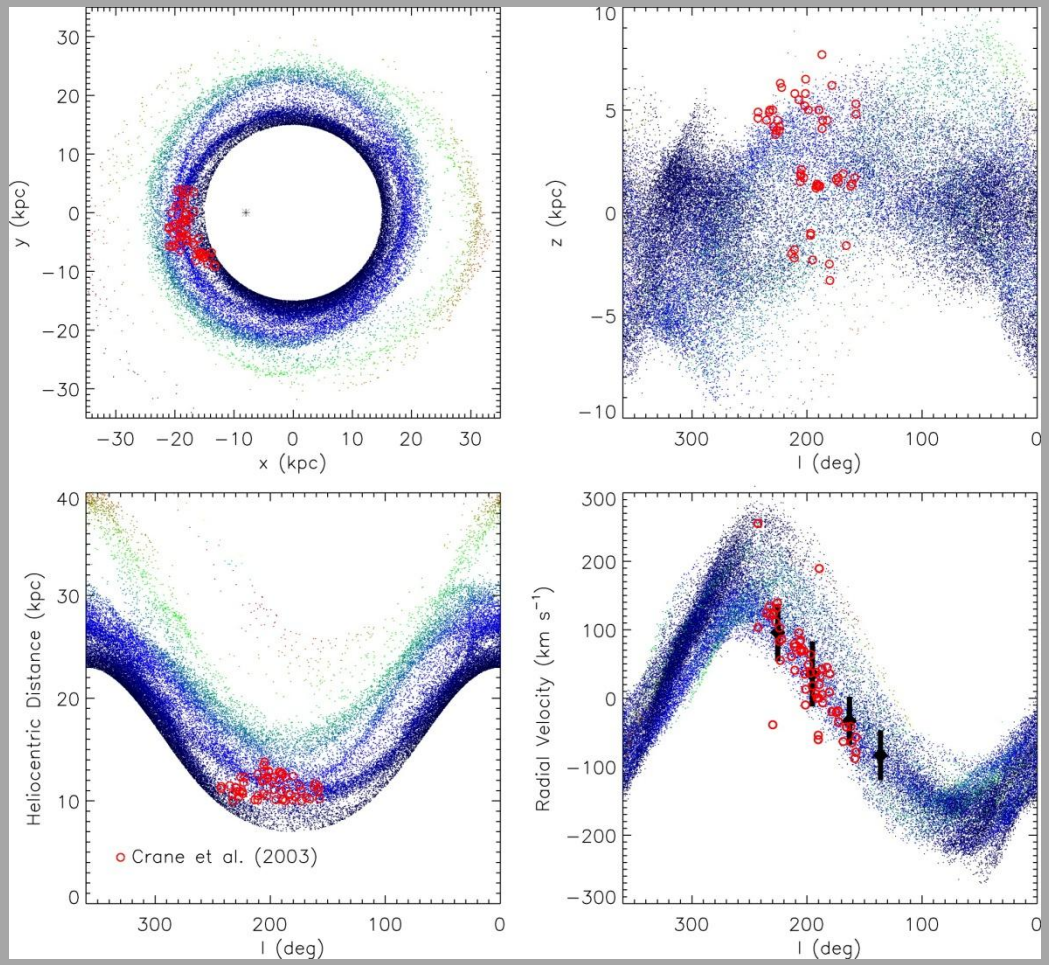


Dwarf Galaxy?





Disrupted Disc from in-falling satellite

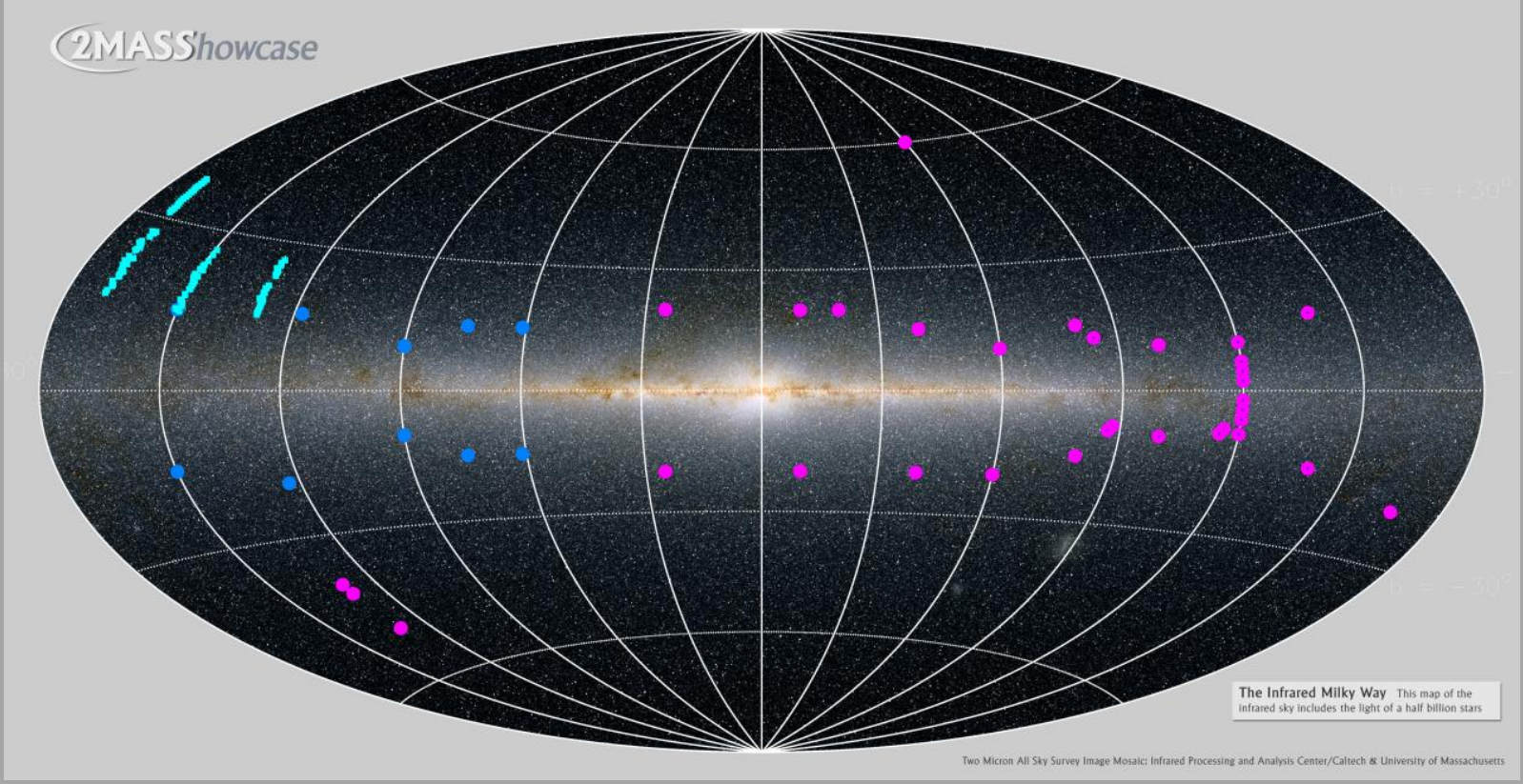


Kazantzidis et al 2008

DANGER: WORK IN PROGRESS!!

Two Approaches

- Studying density gradients in the streams
- SUPRIMECAM



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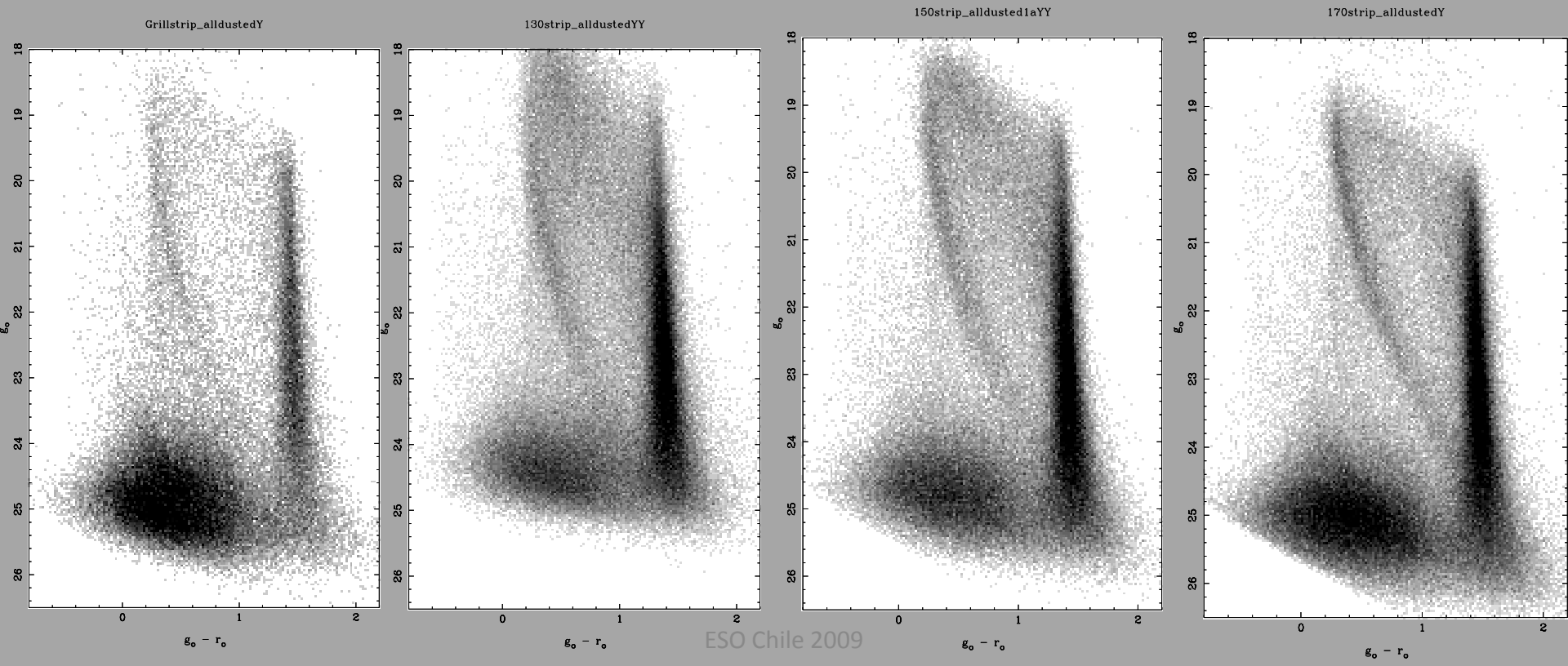
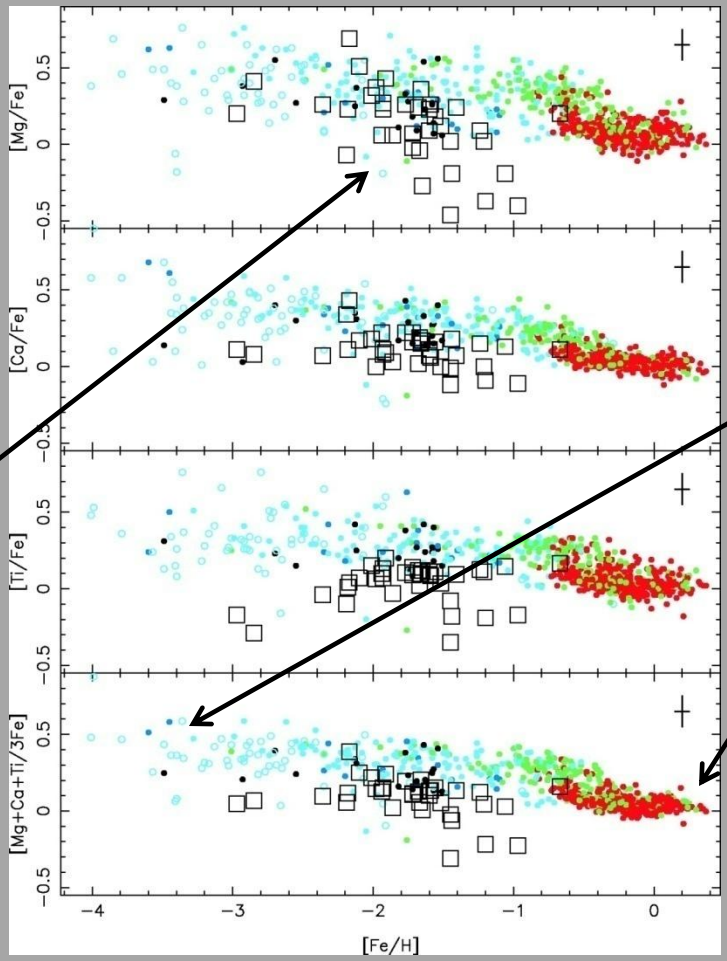


DANGER: PURE SPECULATION!!

Two Approaches

- Studying the chemical abundance patterns



Dwarf Galaxy stars

Milky Way stars

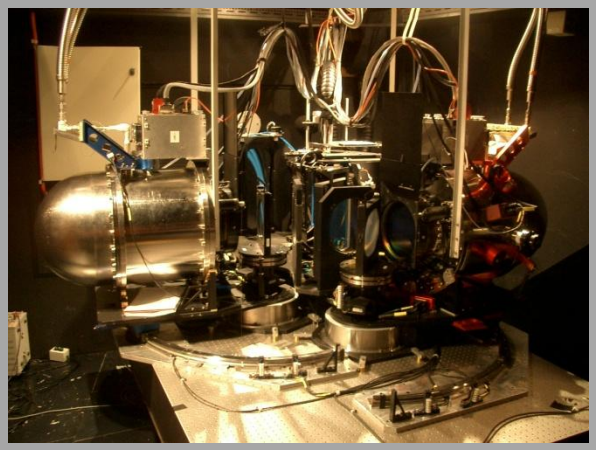
Venn et al 2004

DANGER: PURE SPECULATION!!

Two Approaches

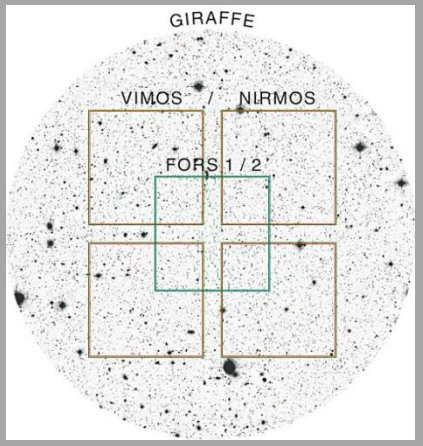
- Studying the chemical abundance patterns

~400 fibres



2dF/AAOmega

FLAMES



~130 fibres