UNIVERSITY OF EXETER
Astrophysics

A CO Survey of Galactic Stellar Clusters

In the

Second Galactic Quadrant

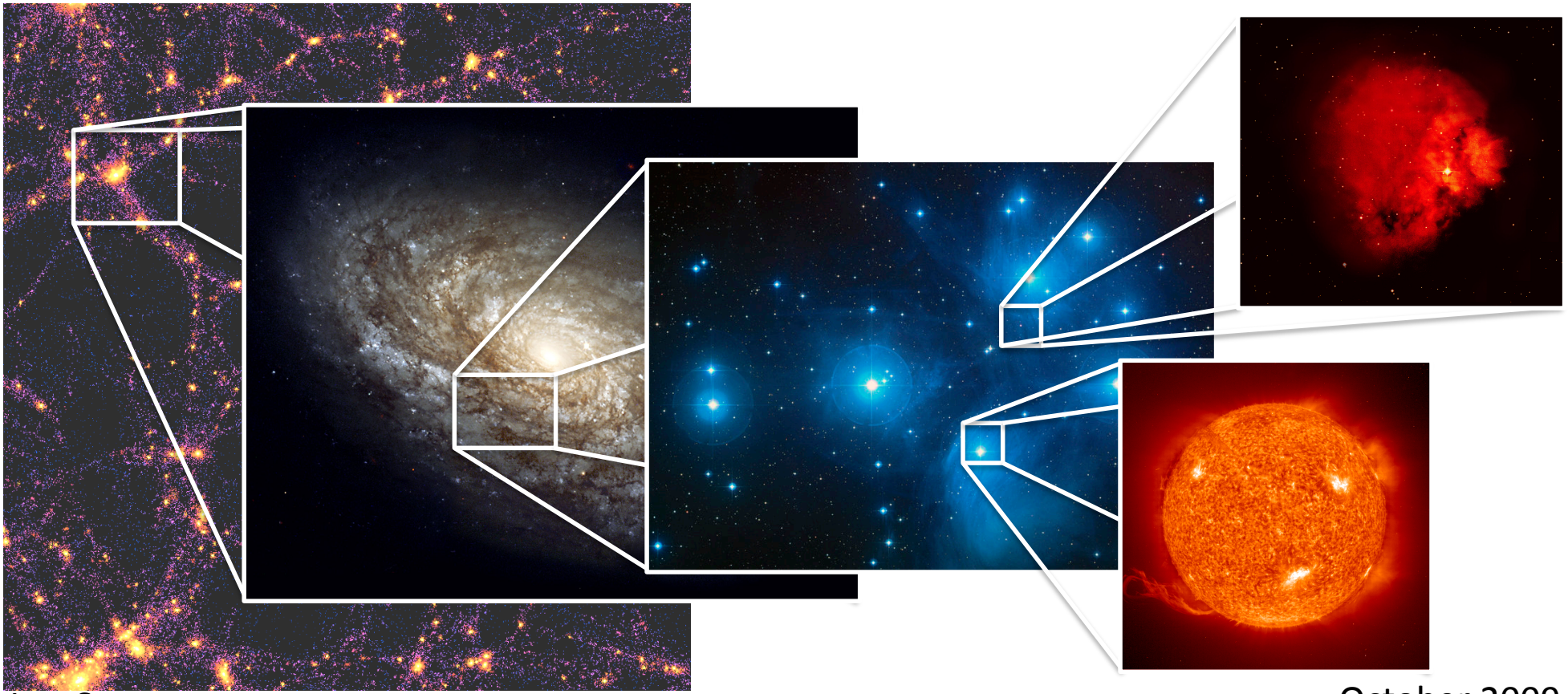
Credit ; Eli Bressert

Lee Summers

October 2009

Star Formation

Galaxy Clusters ← Galaxies ← Stellar Clusters ← Stars ← Molecular Clouds

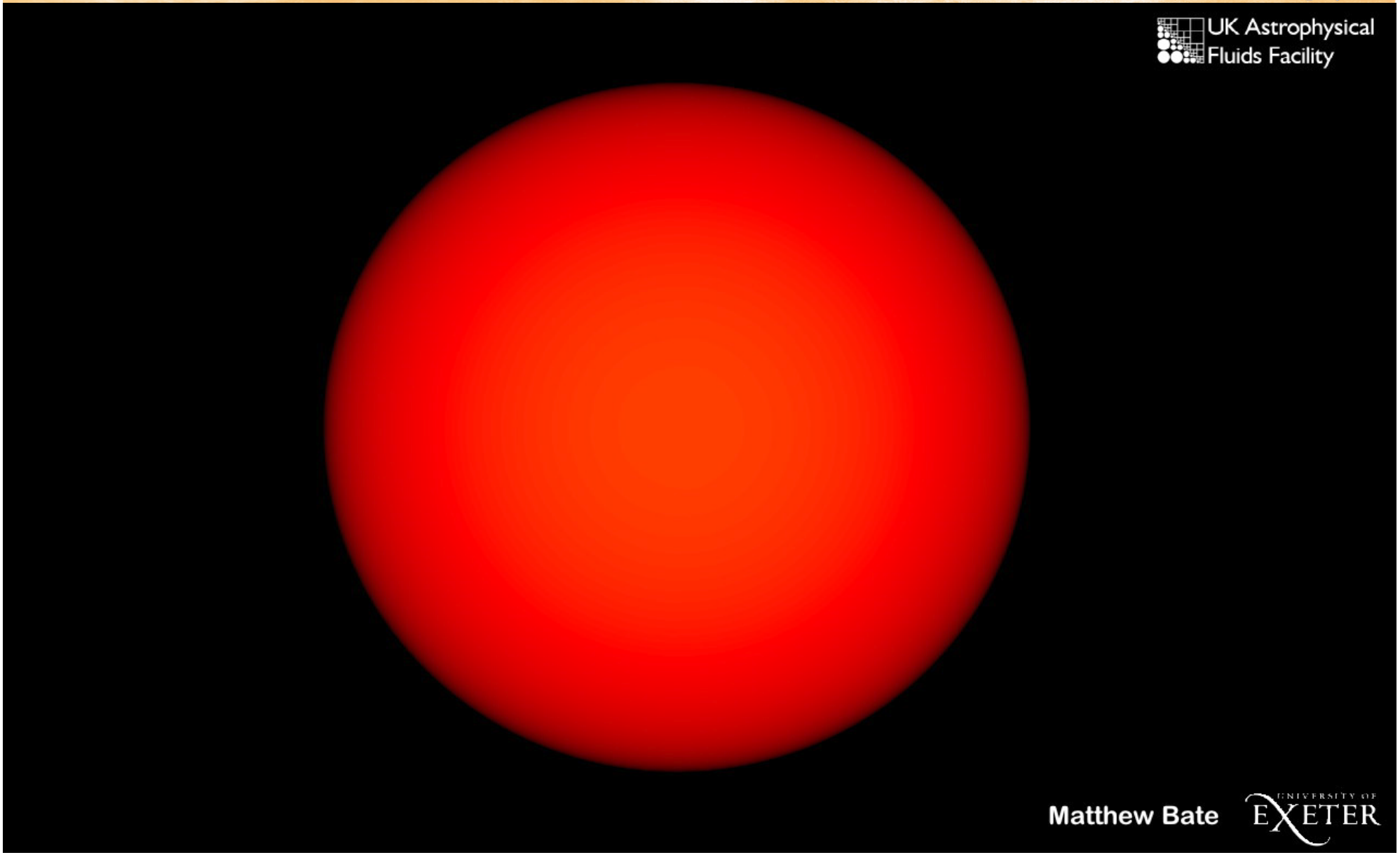


Star Formation

UNIVERSITY OF EXETER
Astrophysics

Star Formation

UNIVERSITY OF EXETER
Astrophysics

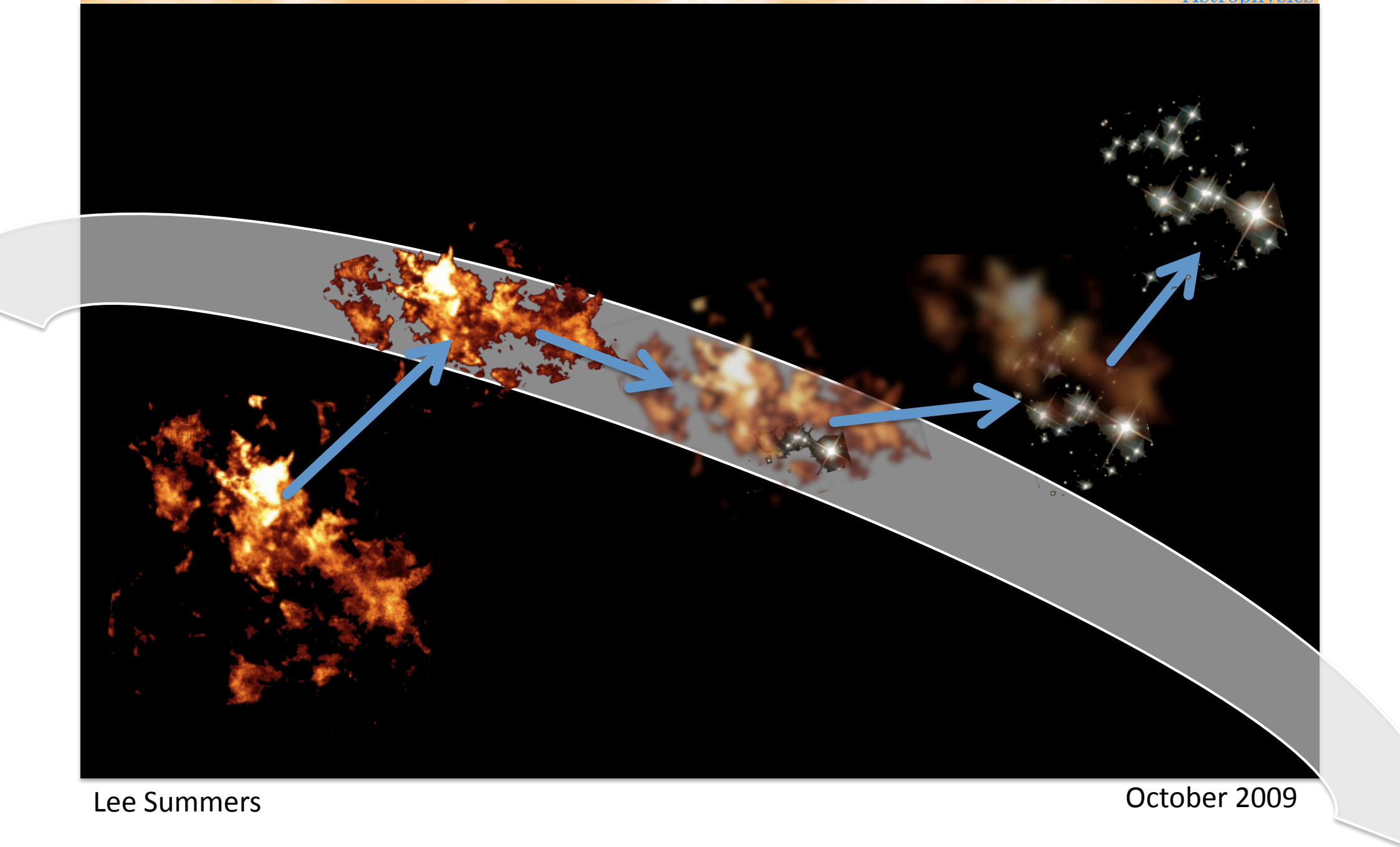


Lee Summers

October 2009

Star Formation

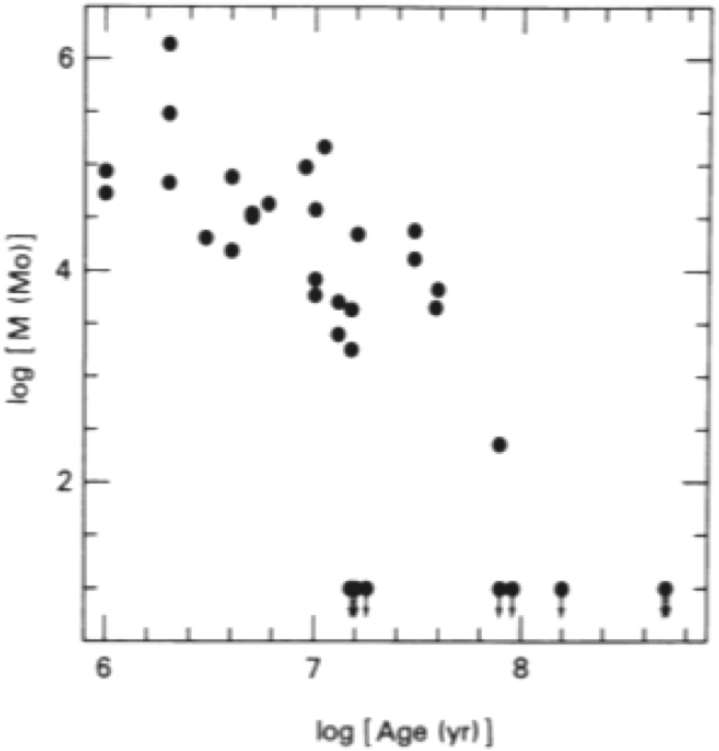
UNIVERSITY OF EXETER
Astrophysics



Lee Summers

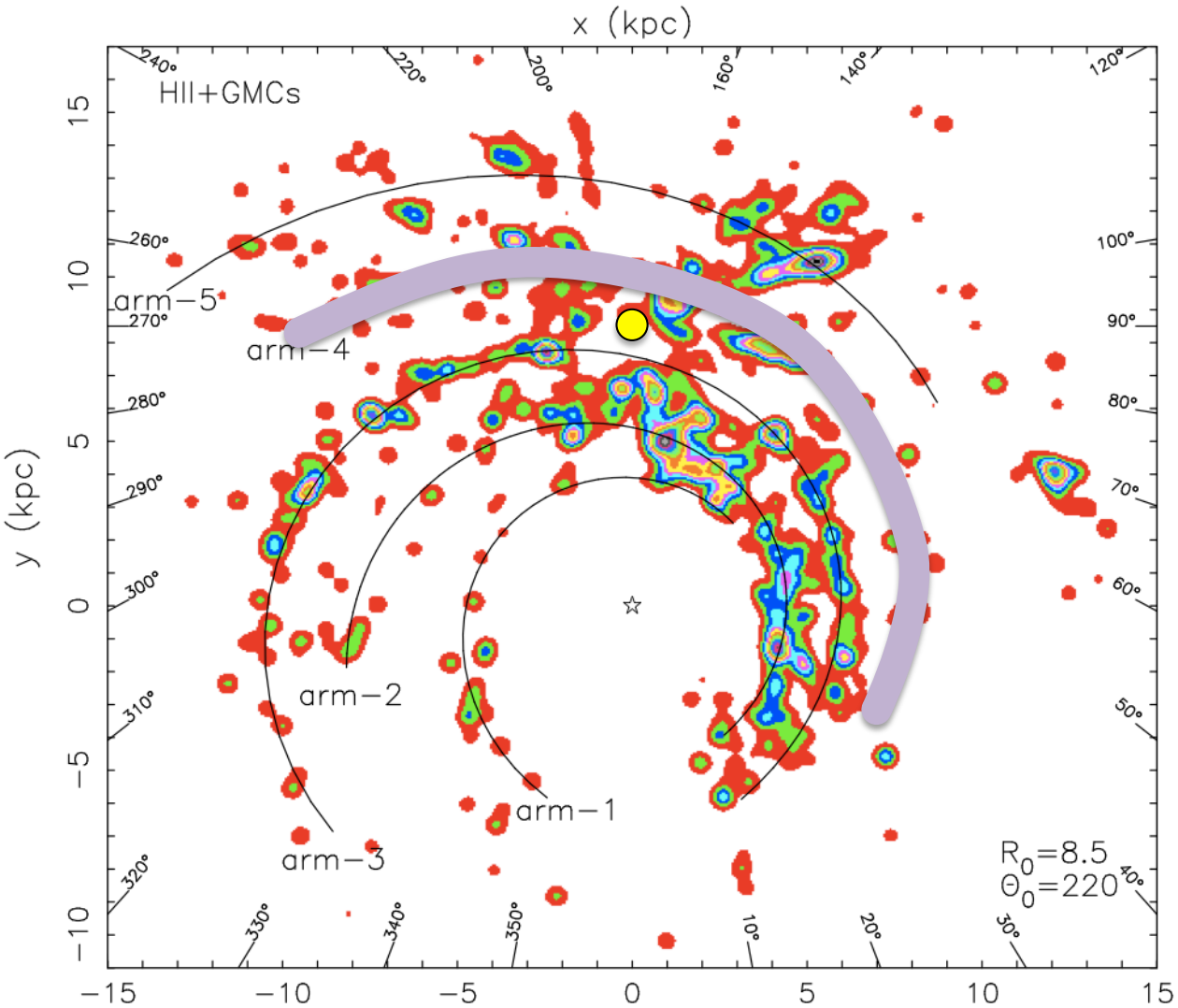
October 2009

Cloud Classification



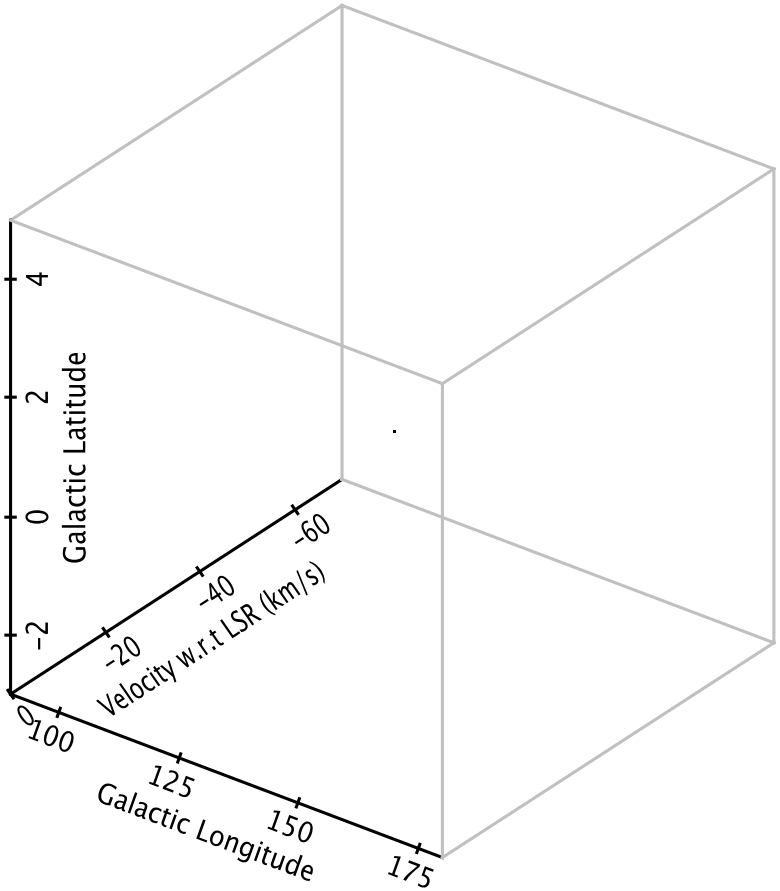
Credit – Leisawitz et al. 1989

Distribution of Gases in the Milky Way

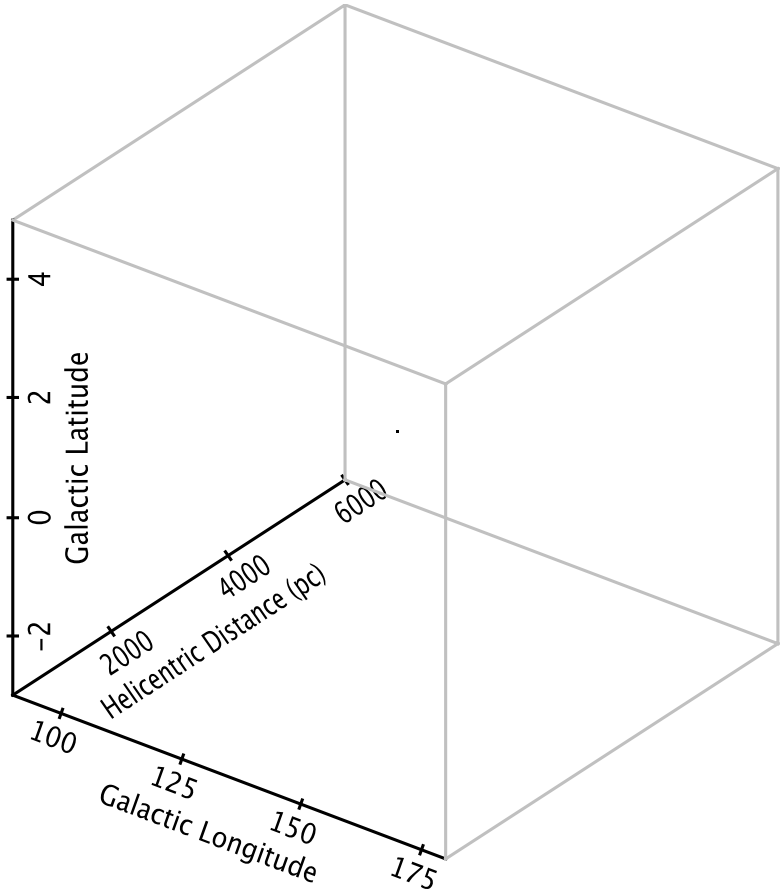


UNIVERSITY OF EXETER Astrophysics

Parameter Space



$$(\theta_x, \theta_y, \frac{dz}{dt})$$



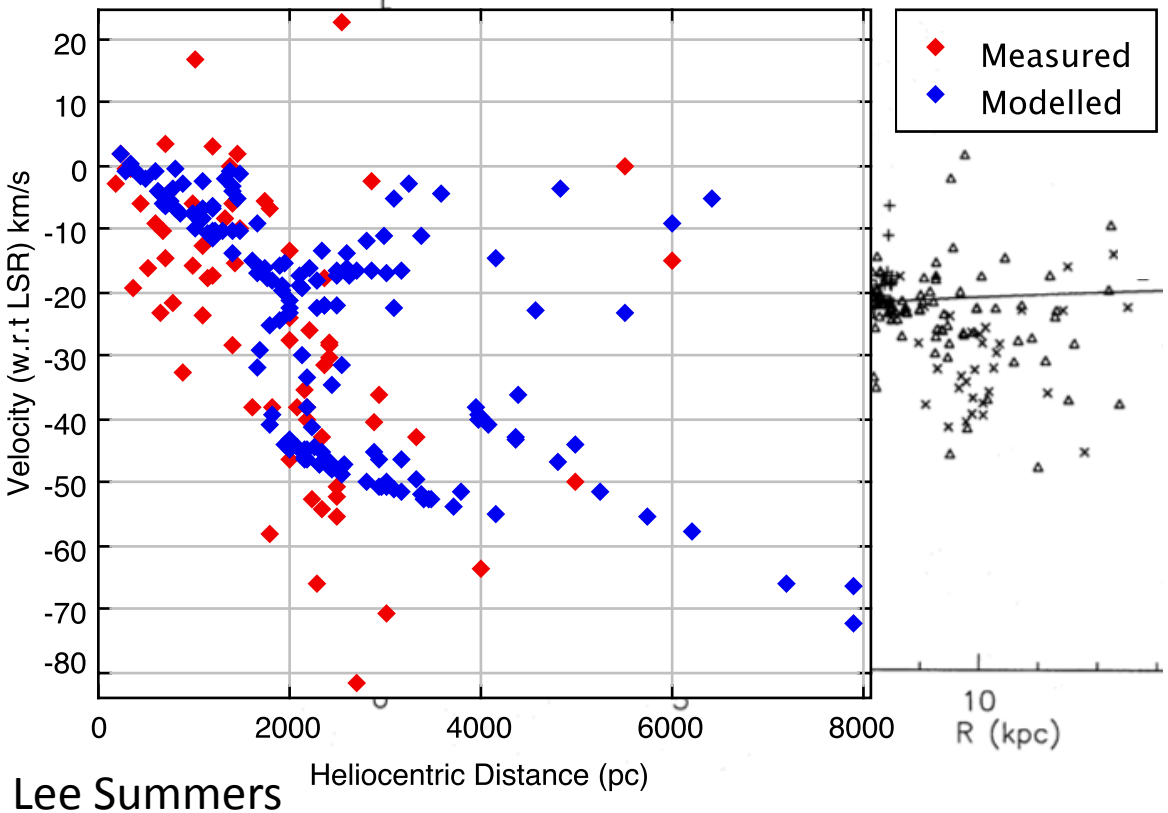
$$(\theta_x, \theta_y, z)$$

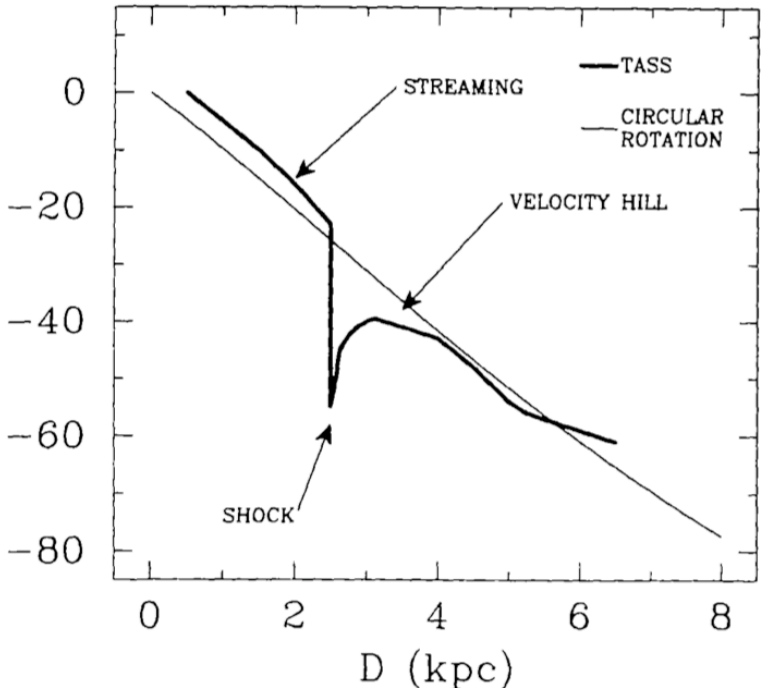
UNIVERSITY OF EXETER Astrophysics

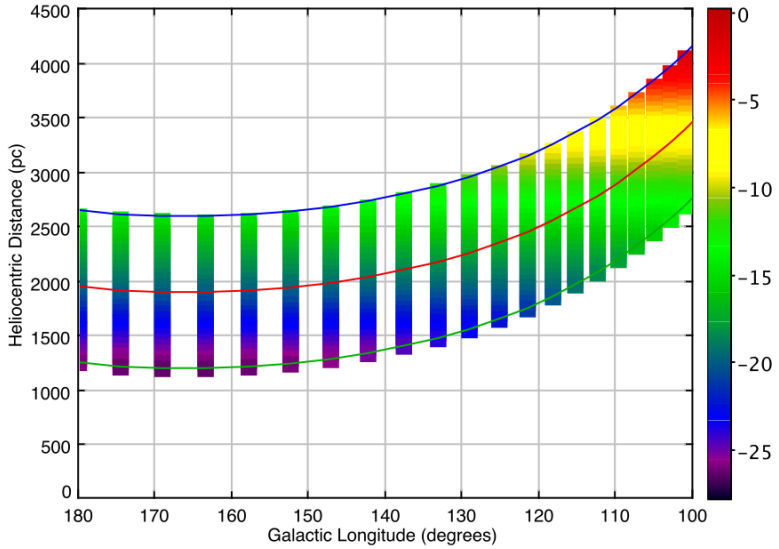
Velocity Field

$$Potential \rightarrow Velocity\ Shift$$

$$\Delta V_{LSR}^{shock} = \left(8.74 \pm 1.10.\frac{R}{[\mathrm{kpc}]}\right) - (111.09 \pm 13.34)$$







Lee Summers

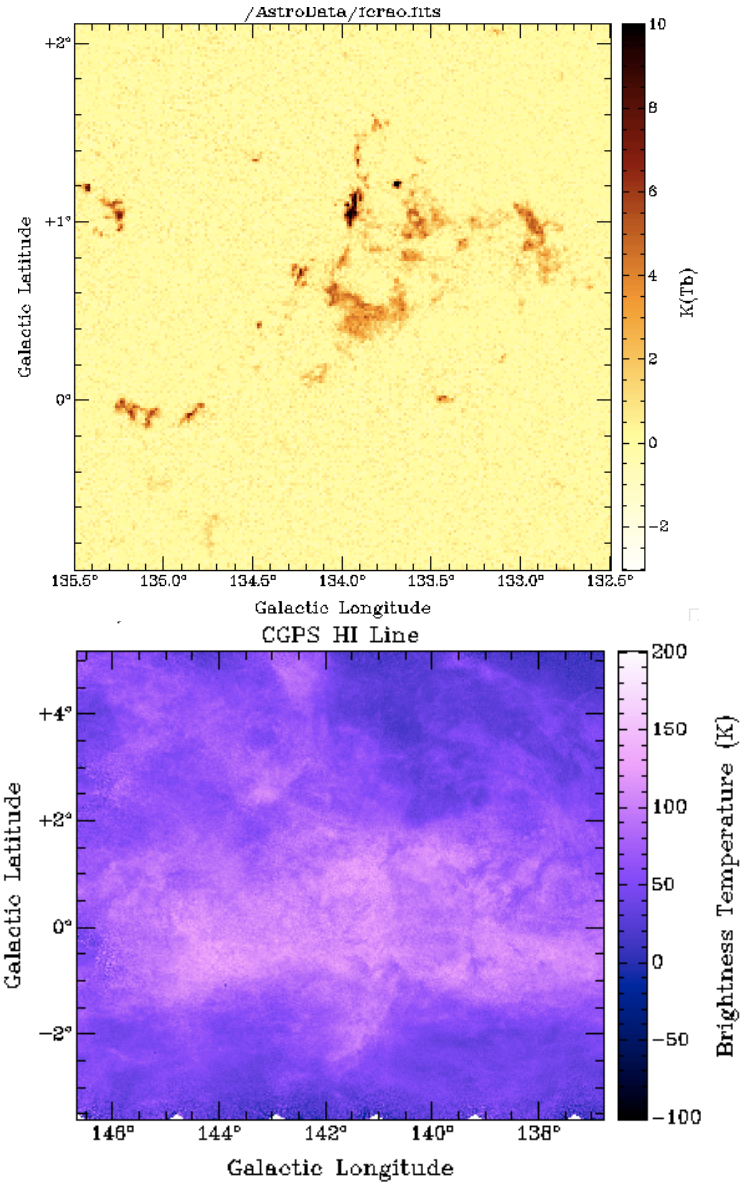
UNIVERSITY OF EXETER Astrophysics

Mass Calculation

$$W = \int_{r=0}^{r} \int_{-\delta v}^{+\delta v} T.dV.2\pi r dr$$

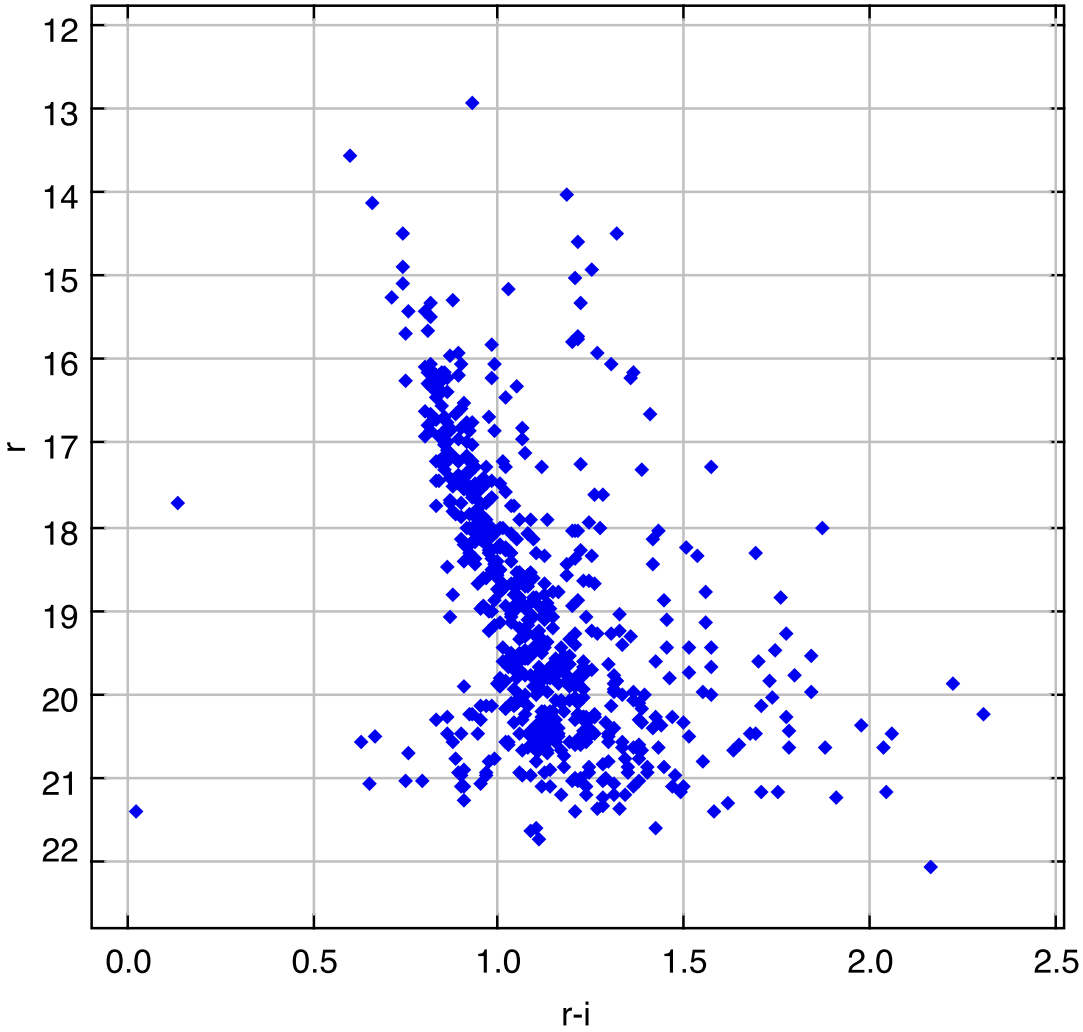
$$N_{col} = X.W$$

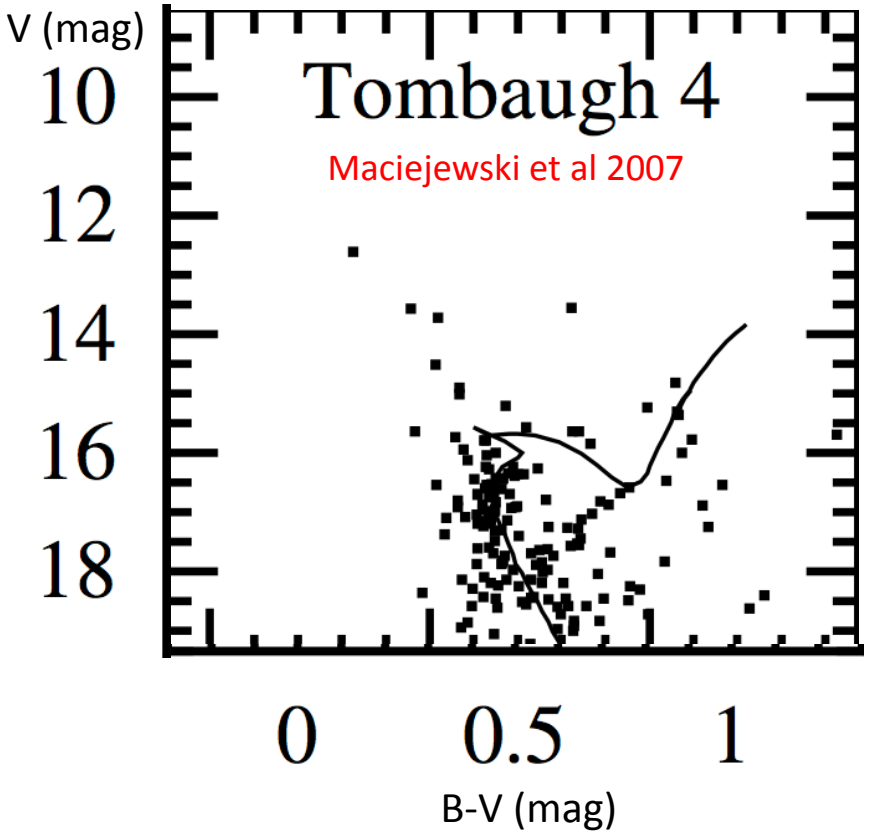
$$M_{tot} = N_{col}.Area.M_{molecule}$$



UNIVERSITY OF EXETER Astrophysics

Catalogue Discrepancies



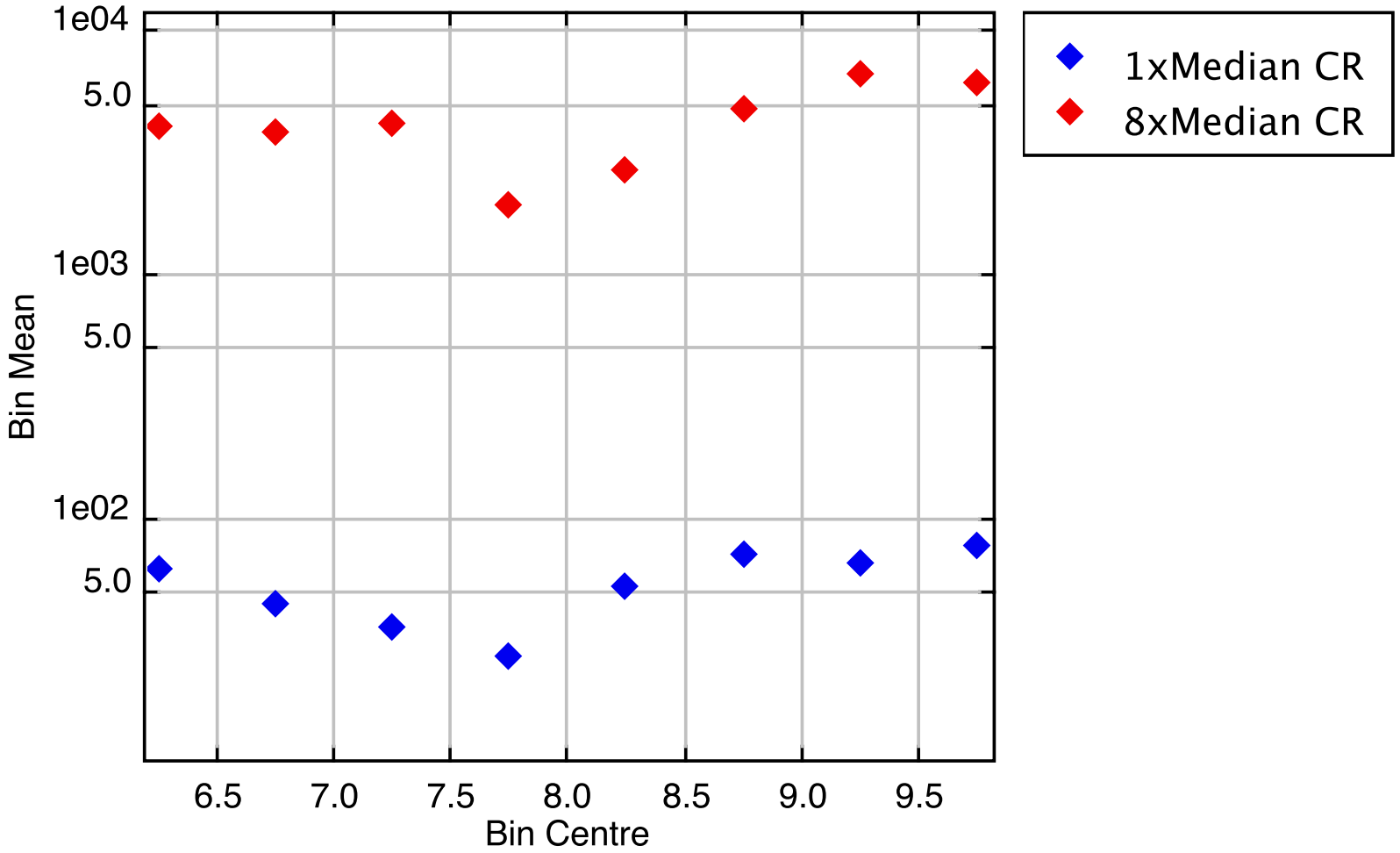


Lee Summers

October 2009

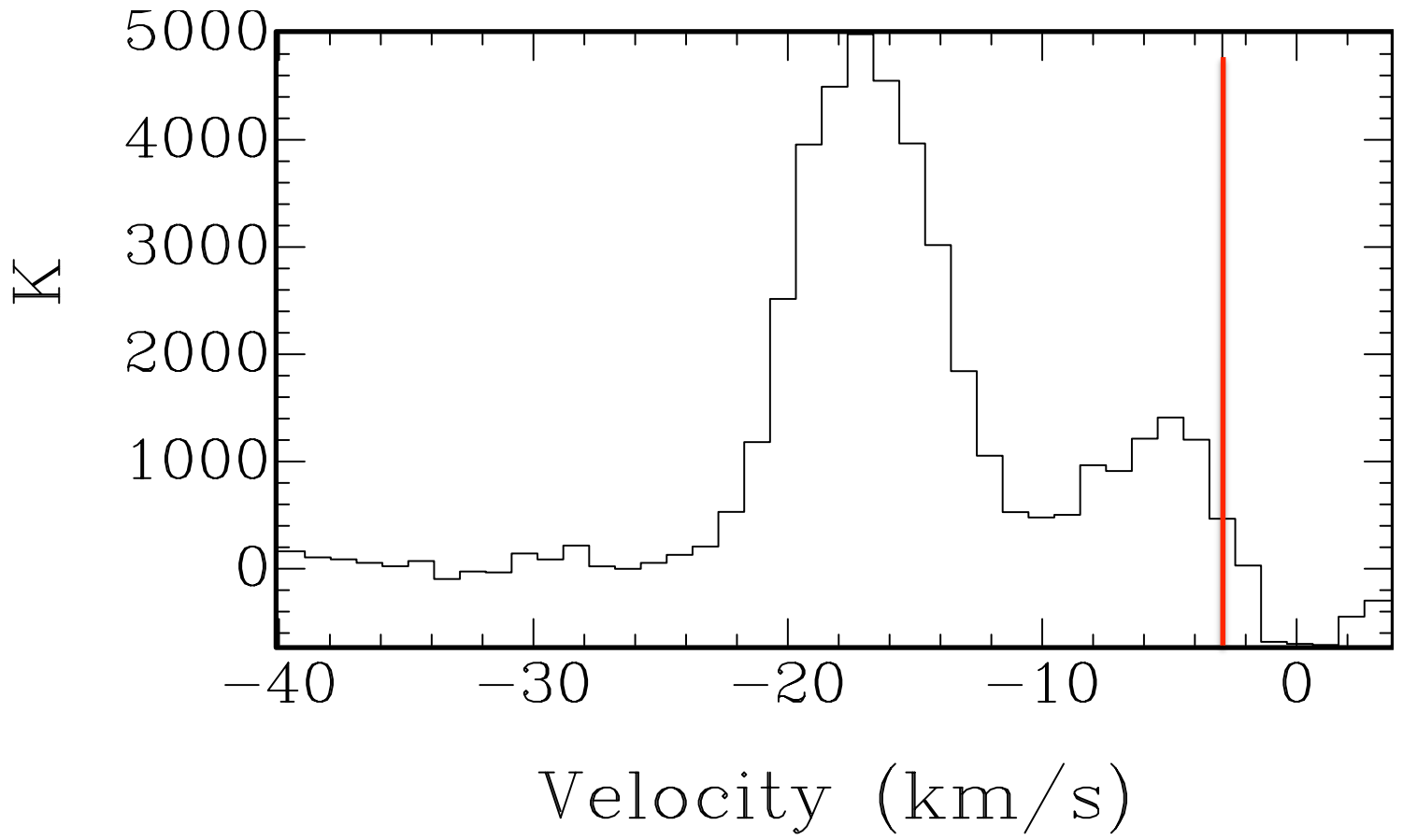
UNIVERSITY OF EXETER Astrophysics

Preliminary Results



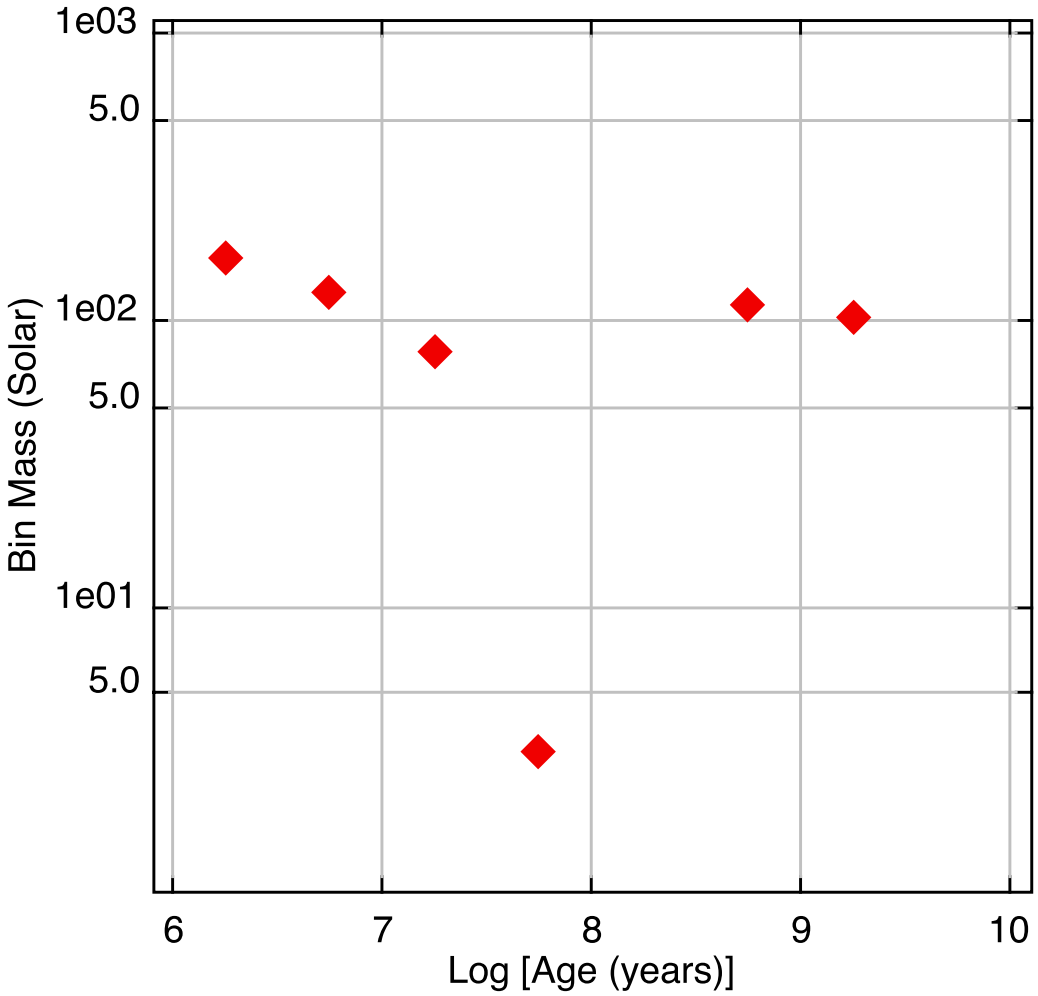
UNIVERSITY OF EXETER Astrophysics

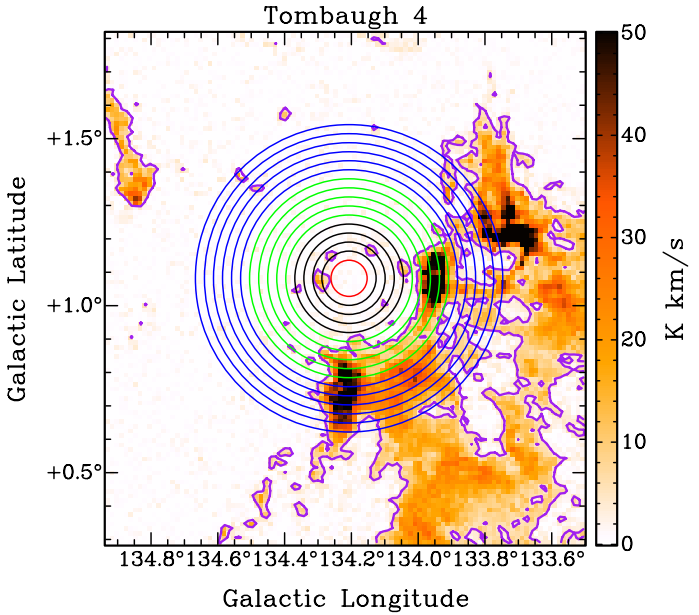
Modification of the Method

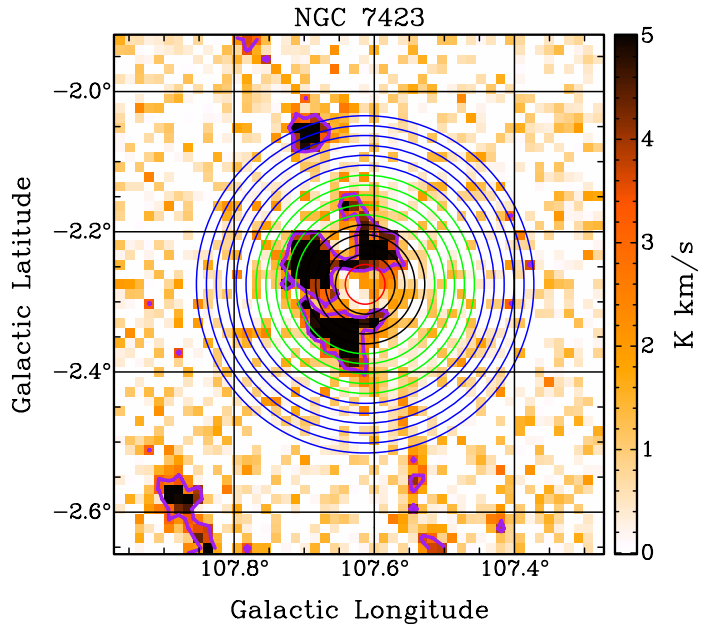


UNIVERSITY OF EXETER Astrophysics

Associated Mass





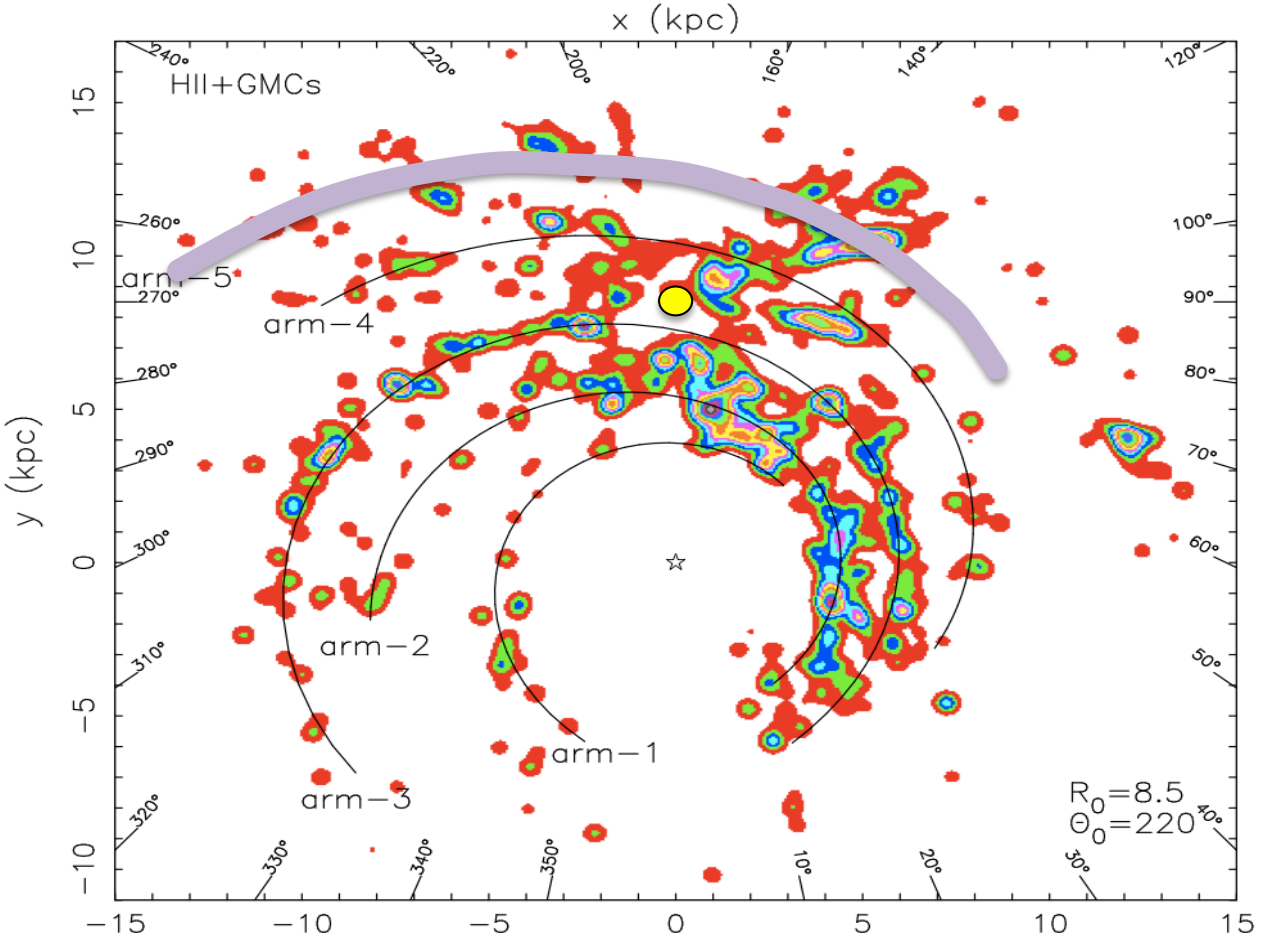


Summary

- Physical association of Gas < 10pc
- Residual gas of formation < 10^8 yrs
- Objectively, material is invariant with age of cluster

Further Work

- Mapping the cluster/gas associations of the outer spiral arm
- Refine t
- Charact
- High ve
  interna



Thank You

Any Questions?