ICC

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Satellite Galaxies in a WDM Universe

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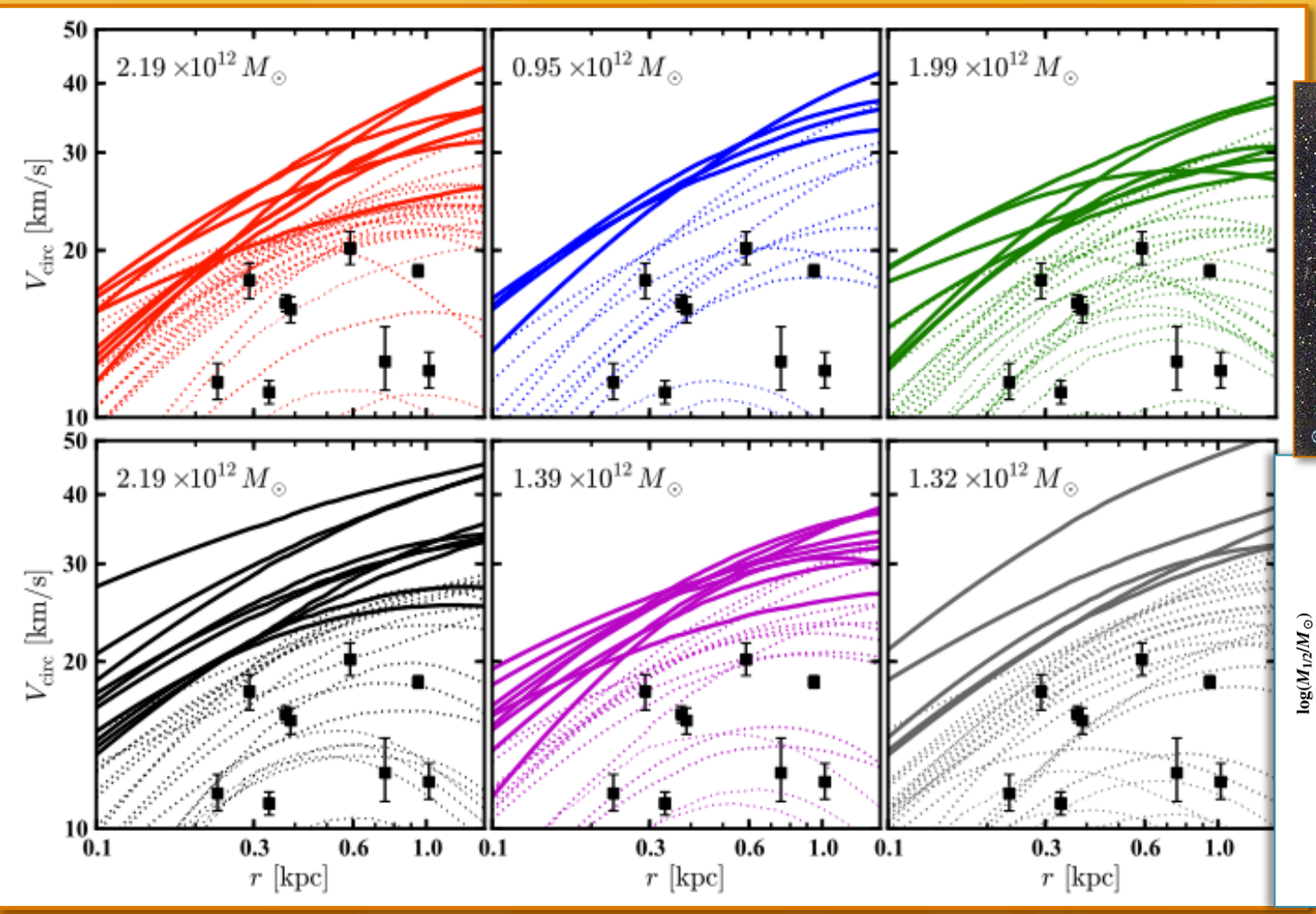
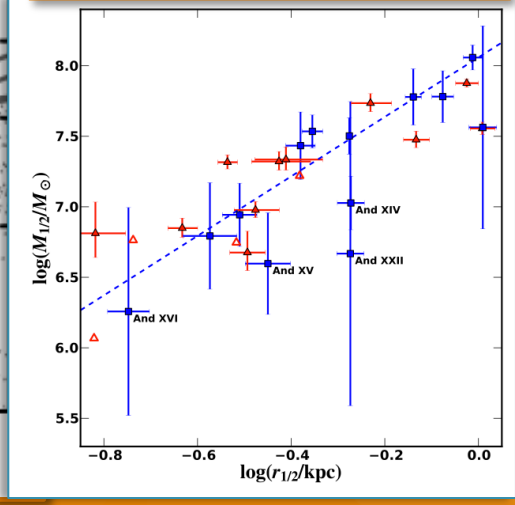
Outline

- Problems to address
- Implementation of warm dark matter
- Results

The Problem

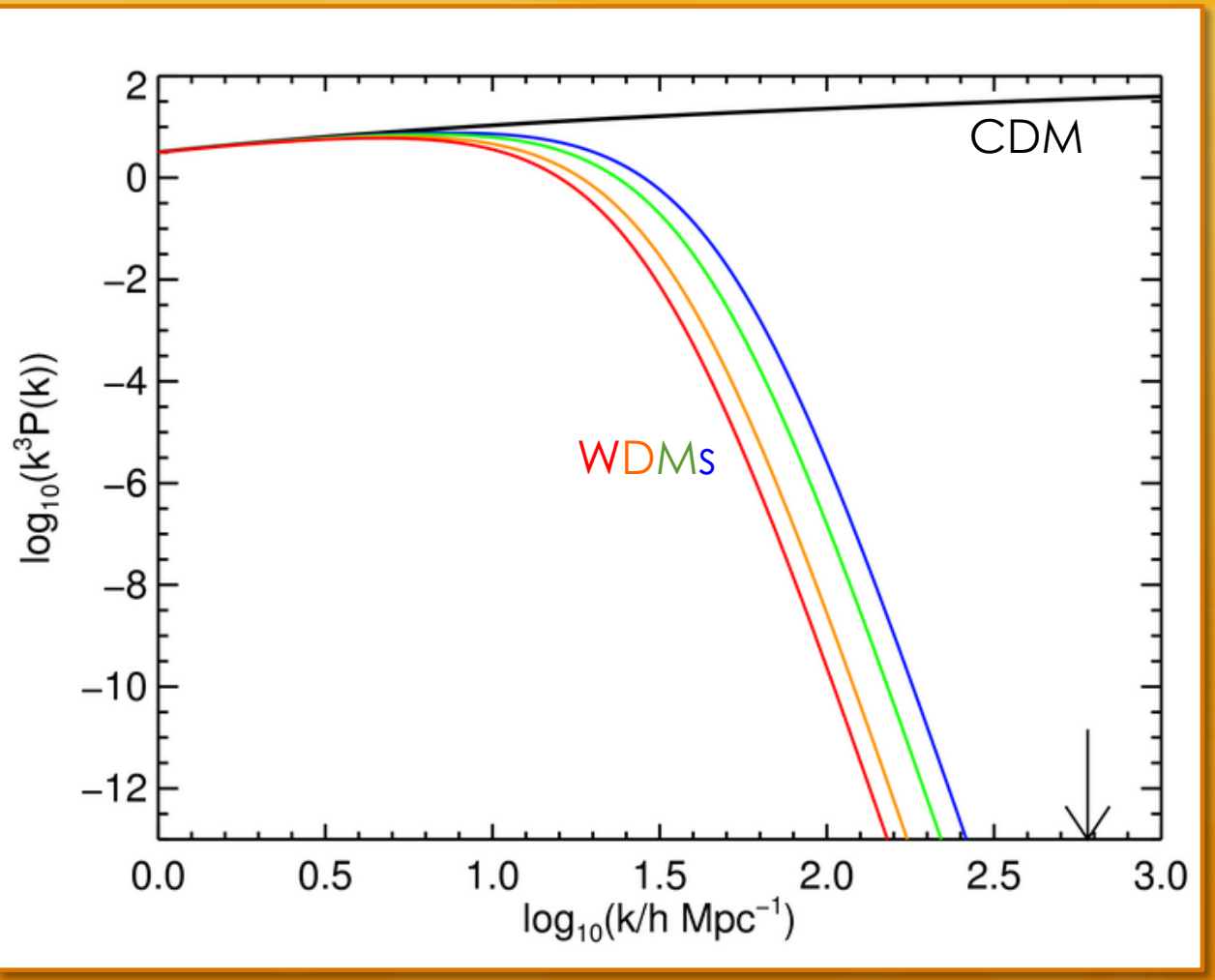


Boylan-Kolchin et al. 2012



Tollerud et al. 2011

Warm Dark Matter

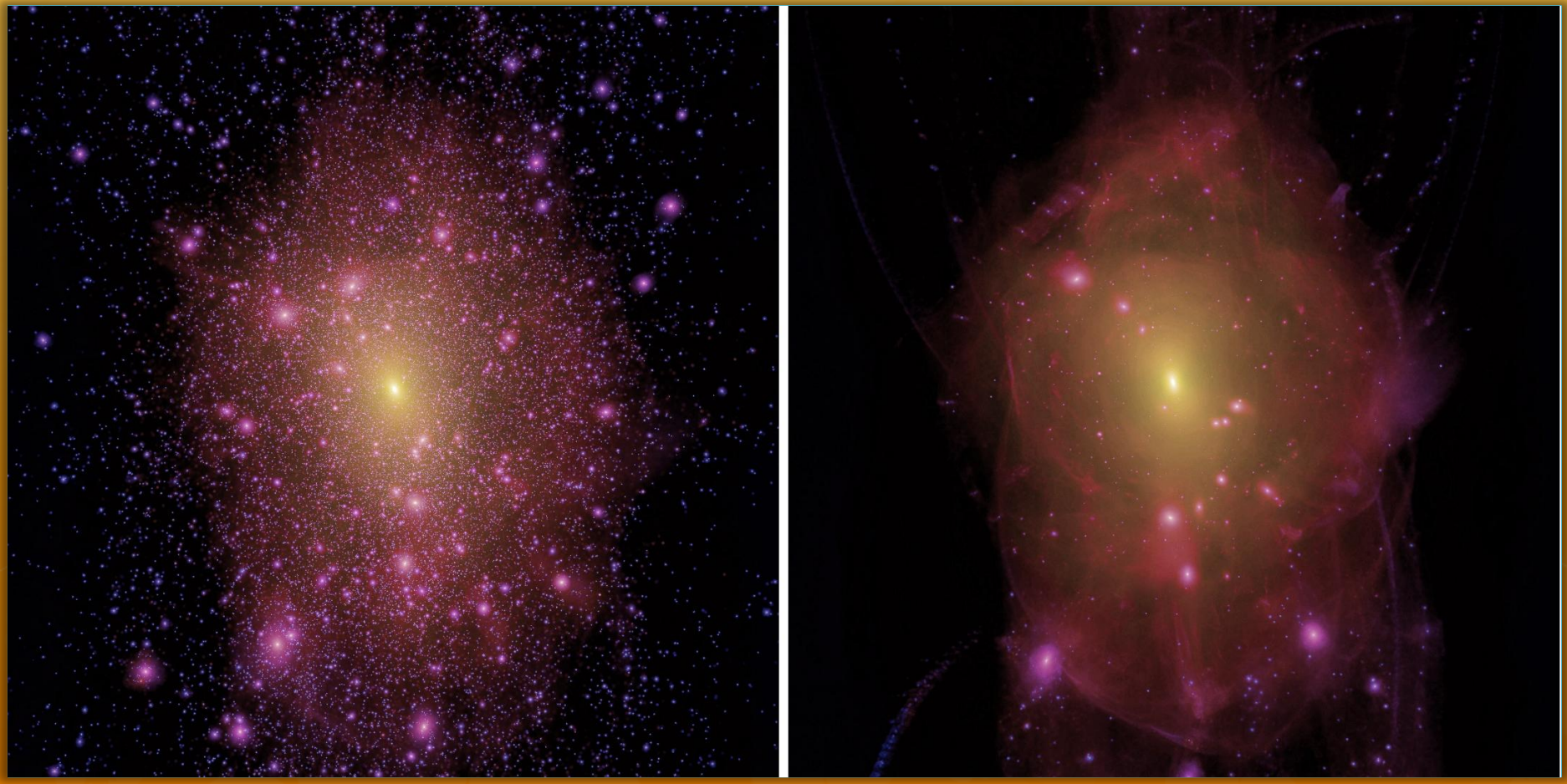


- Particle physics
- Becomes non-relativistic later
- Small scale perturbations erased
- Later formation times/less substructure

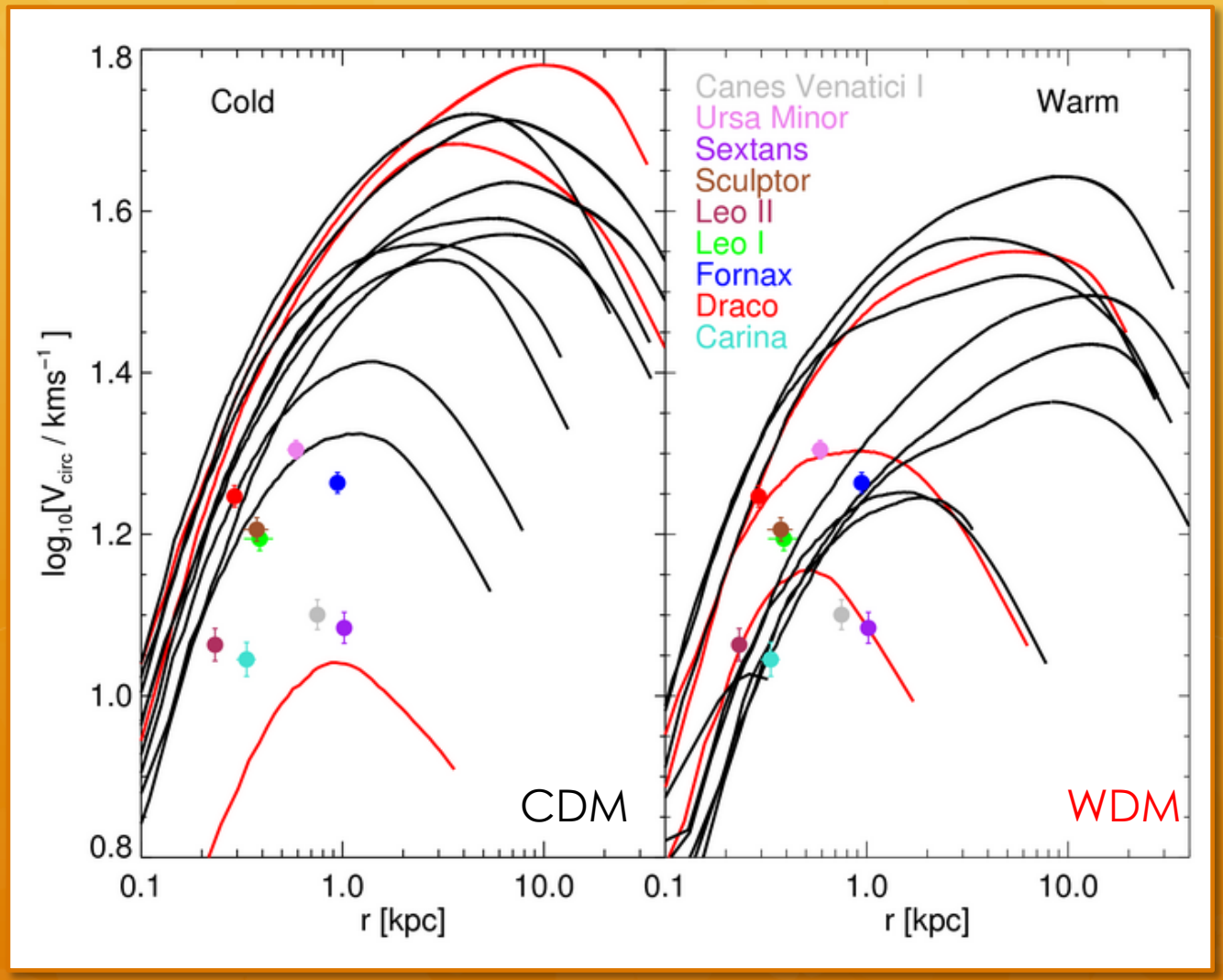
Lovell et al. in prep

The Difference

Lovell et al. 2012 CDM WDM z=0

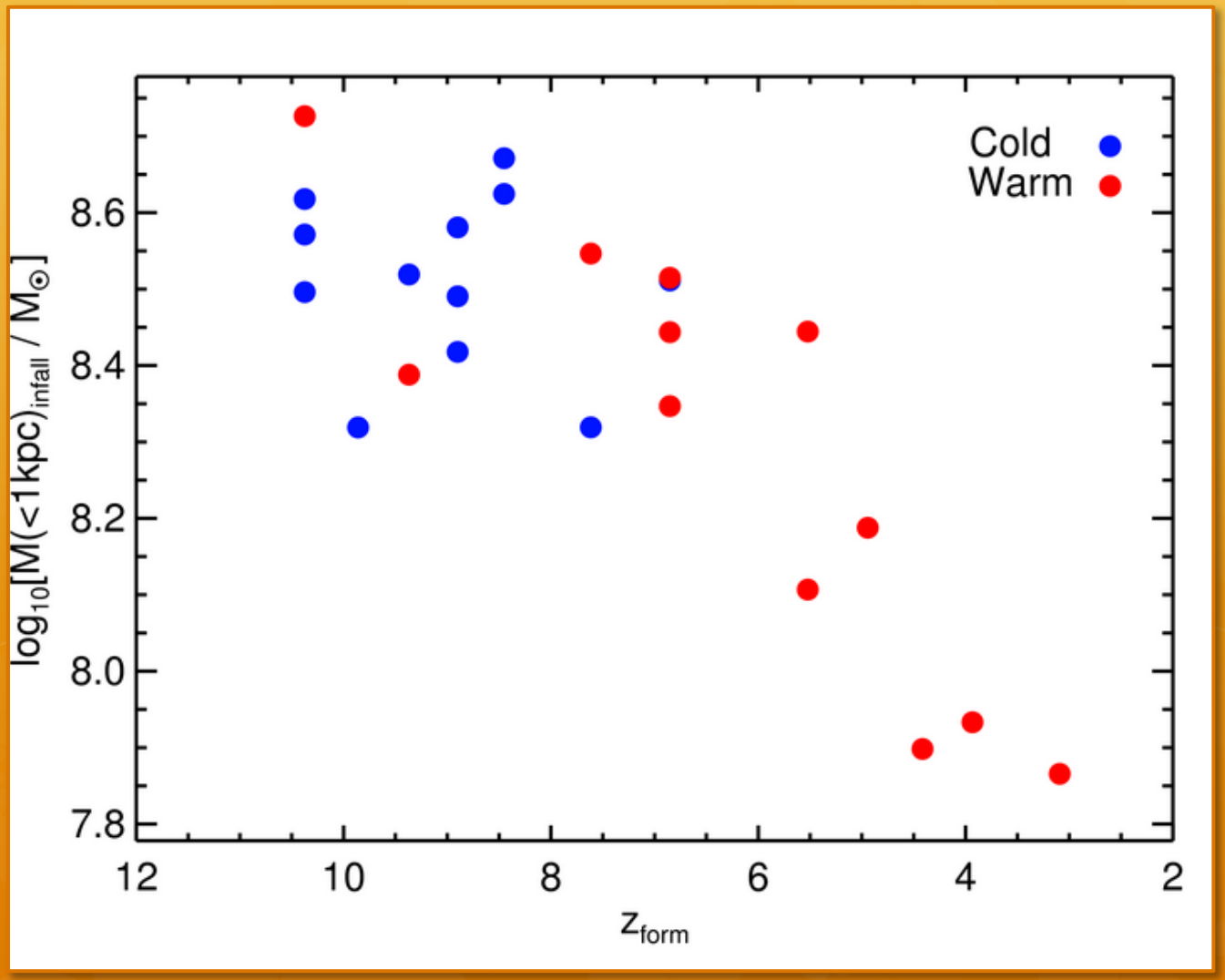


WDM and satellites



Lovell et al. 2012

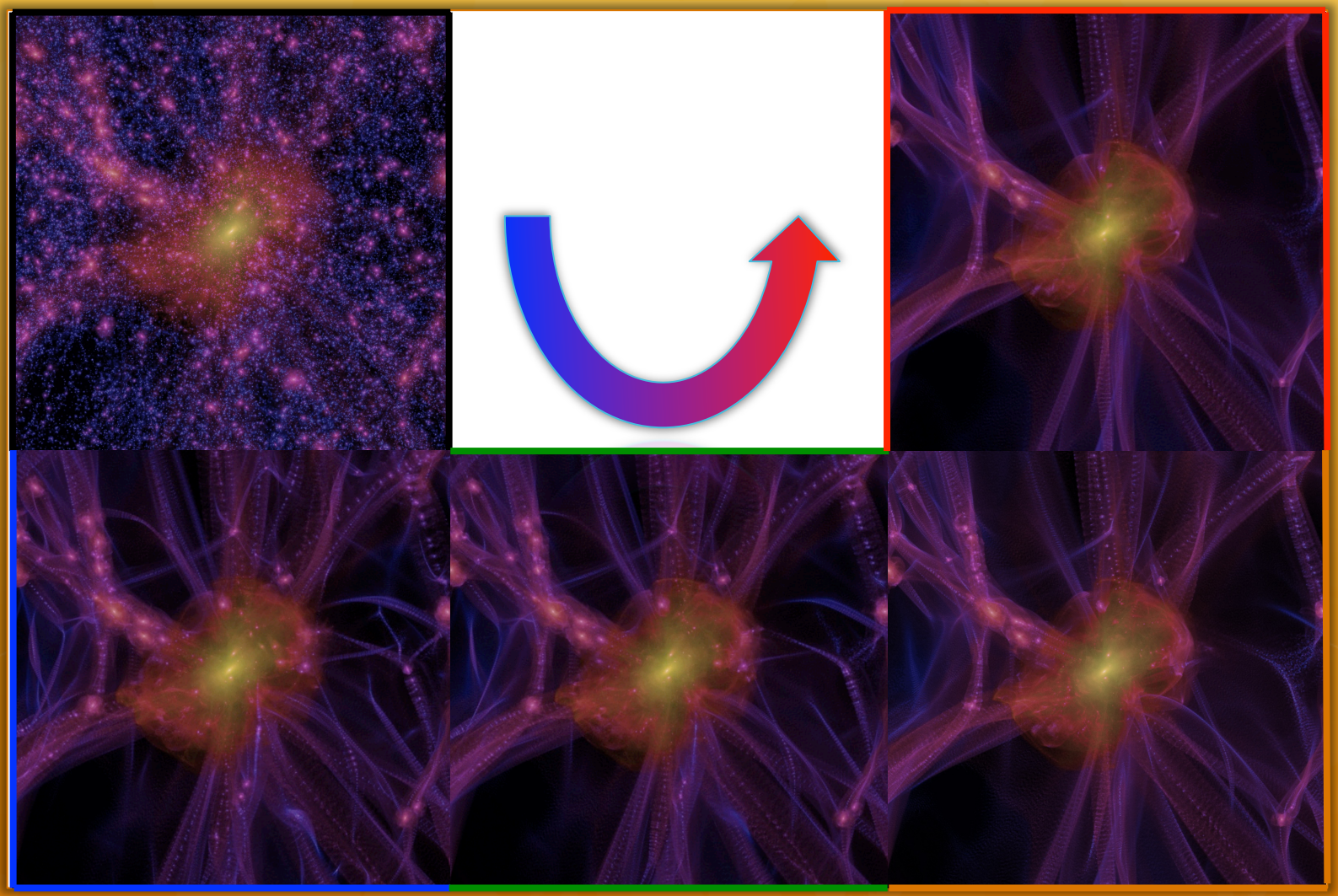
WDM Formation Times



Lovell et al. 2012

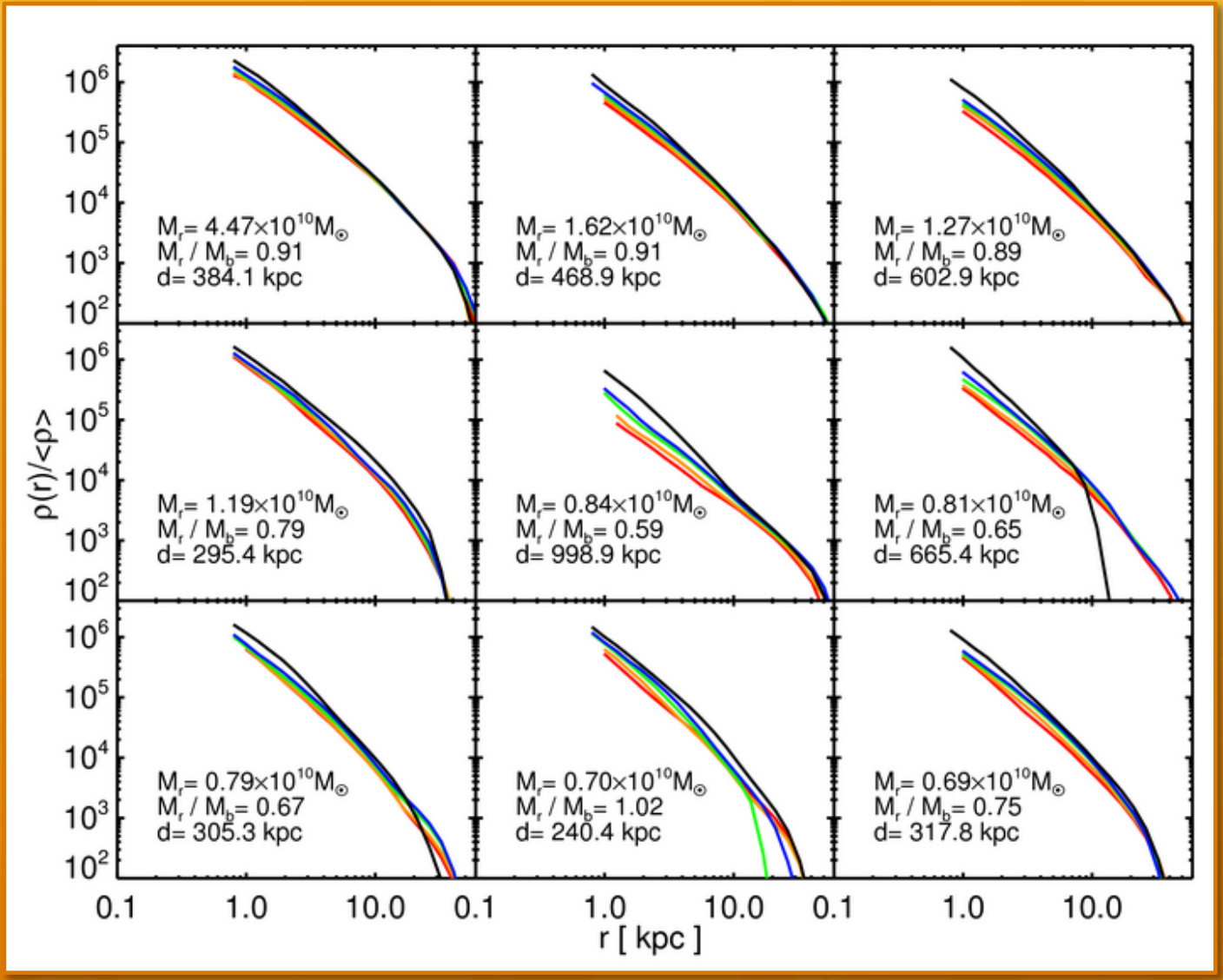
Current Work

z=0



Lovell et al. in prep

Density Profiles

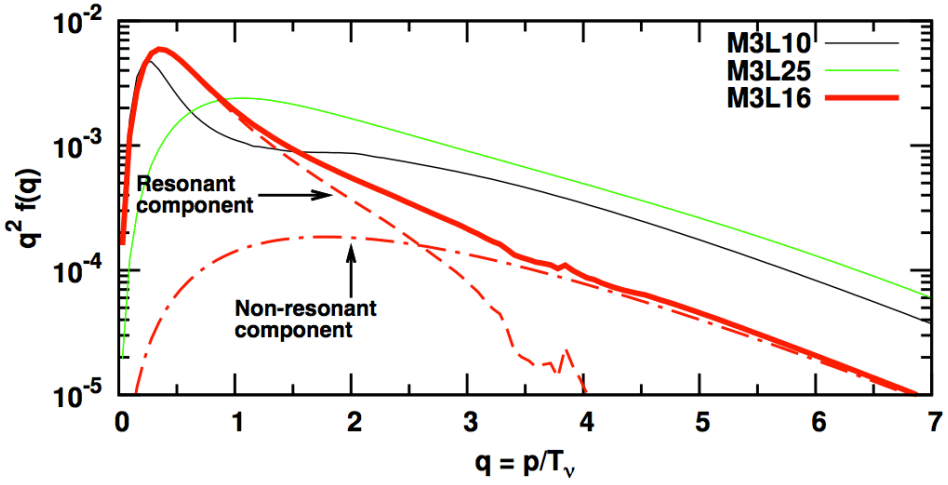


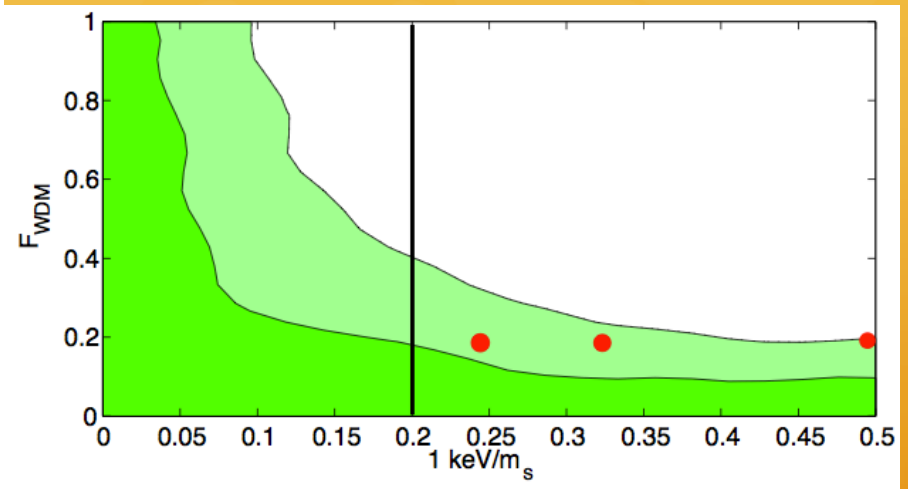
Lovell et al. in prep

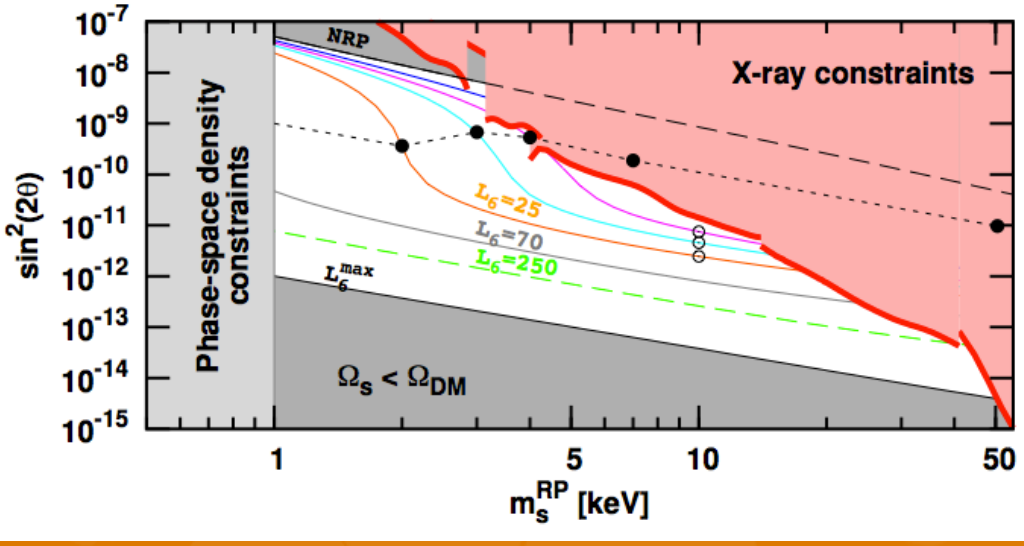
Conclusions

- CDM predicts more dark matter in the centres of satellite galaxies than has been observed.
- Simulated Aq-A halo with WDM power spectrum (suppress power at small scales).
- ‘Massive satellite problem’ ameliorated by late formation of WDM haloes compared to CDM.
- Now examining the effects of different sterile neutrino masses.

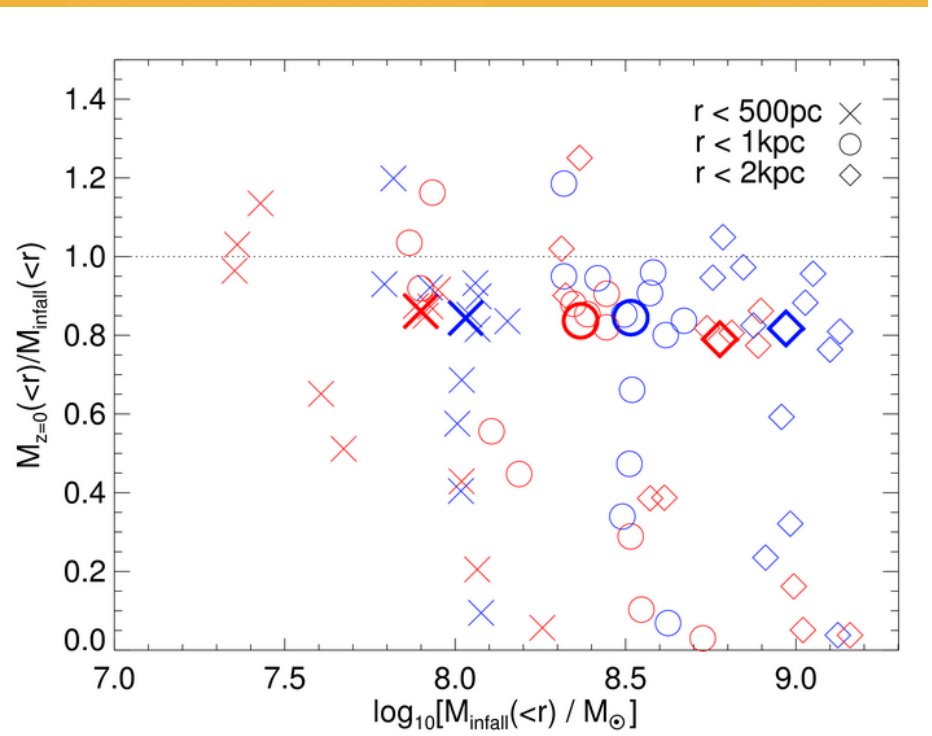
Bonus slide 1

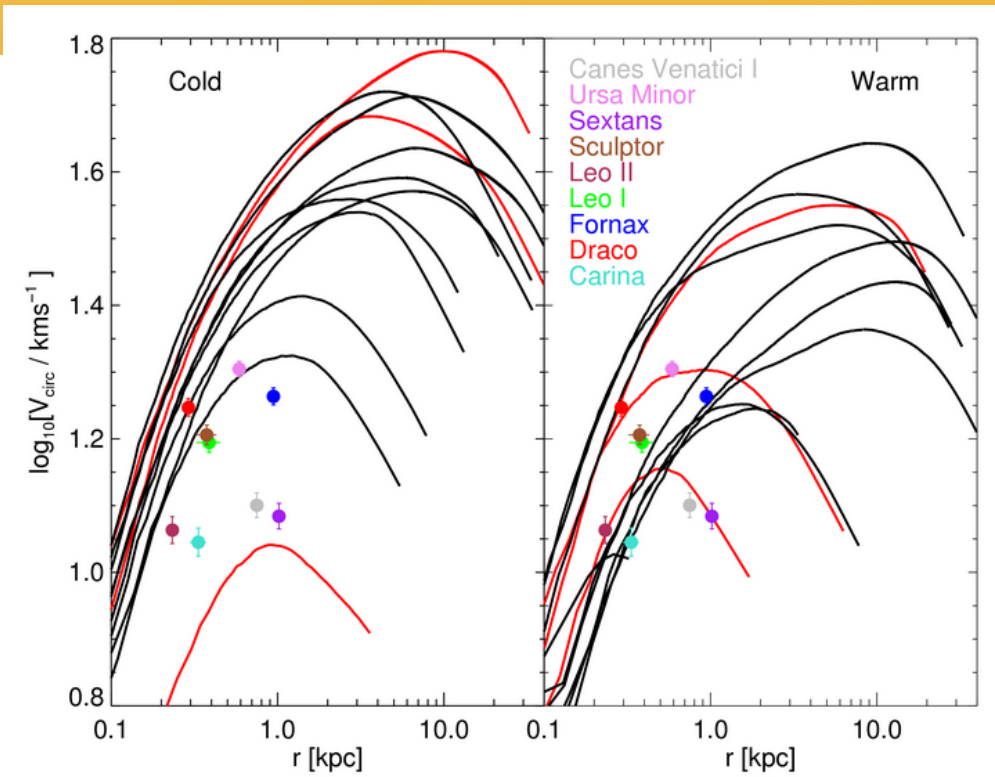






Bonus Slide 2





Bonus Slide 3