

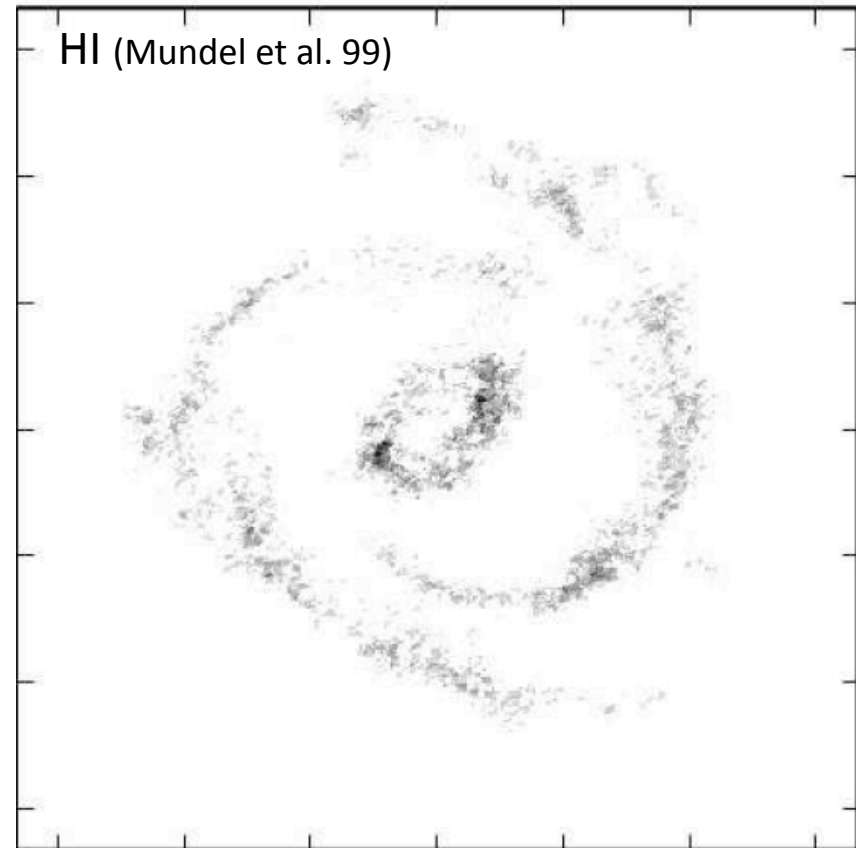
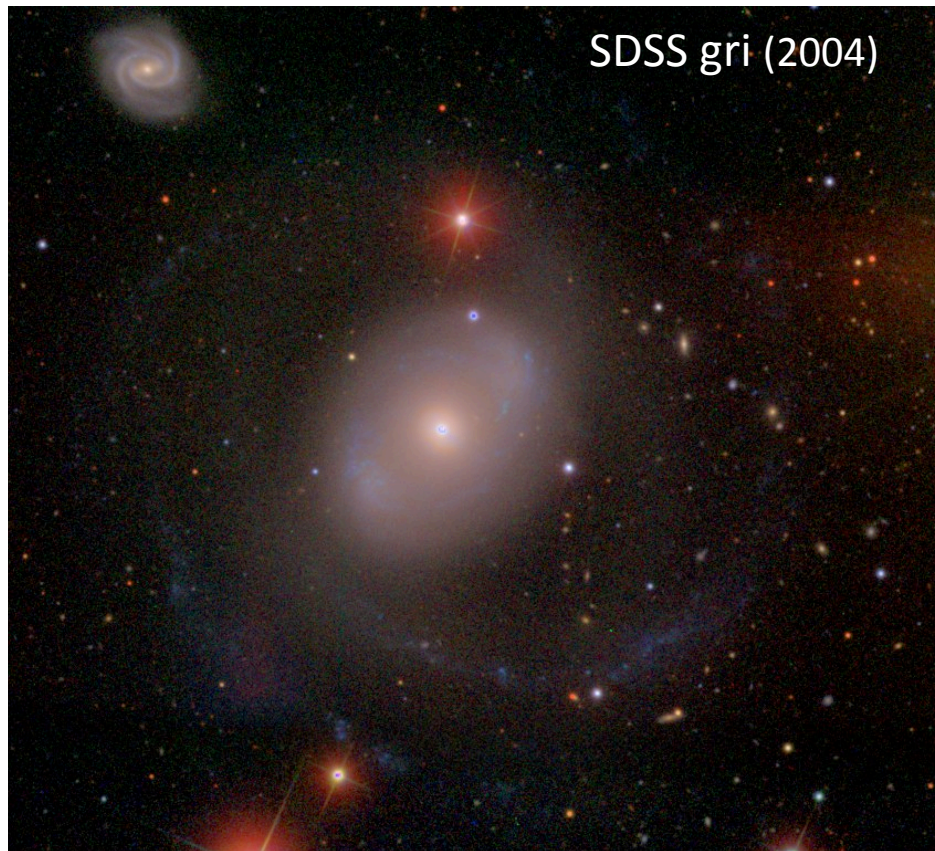
Central Massive Objects, June, 24th 2010

Molecular gas in the central kpc of NGC4151

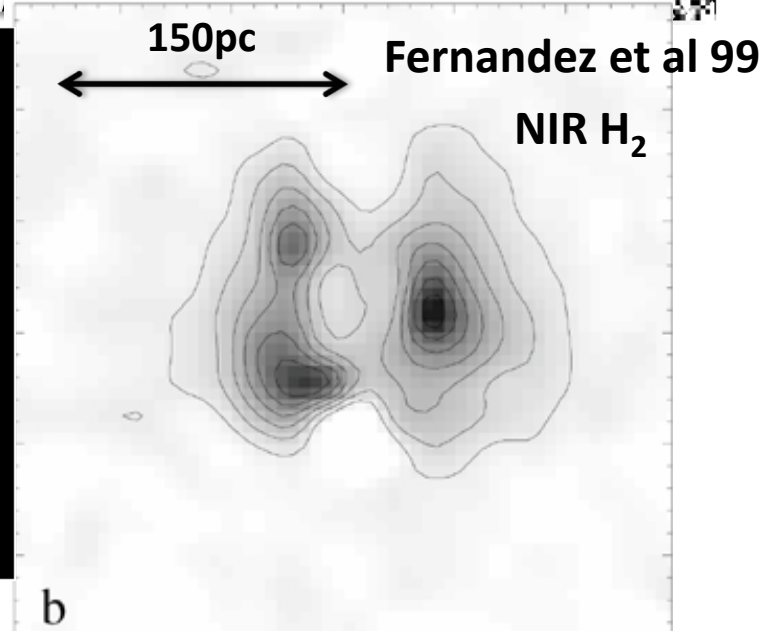
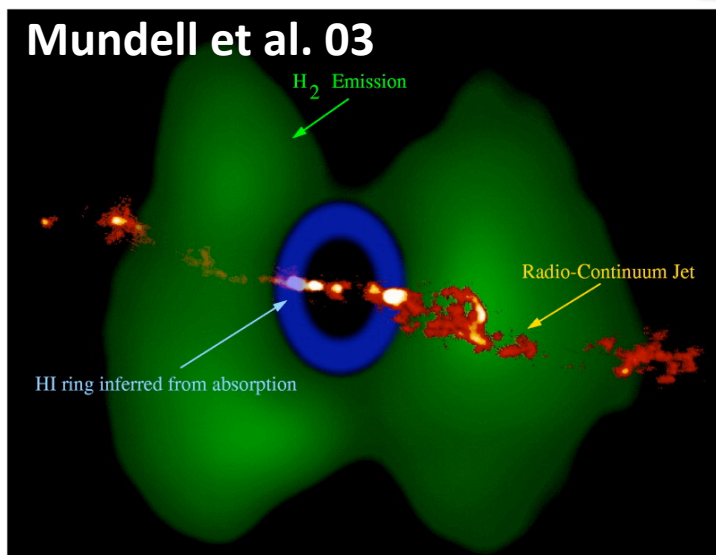
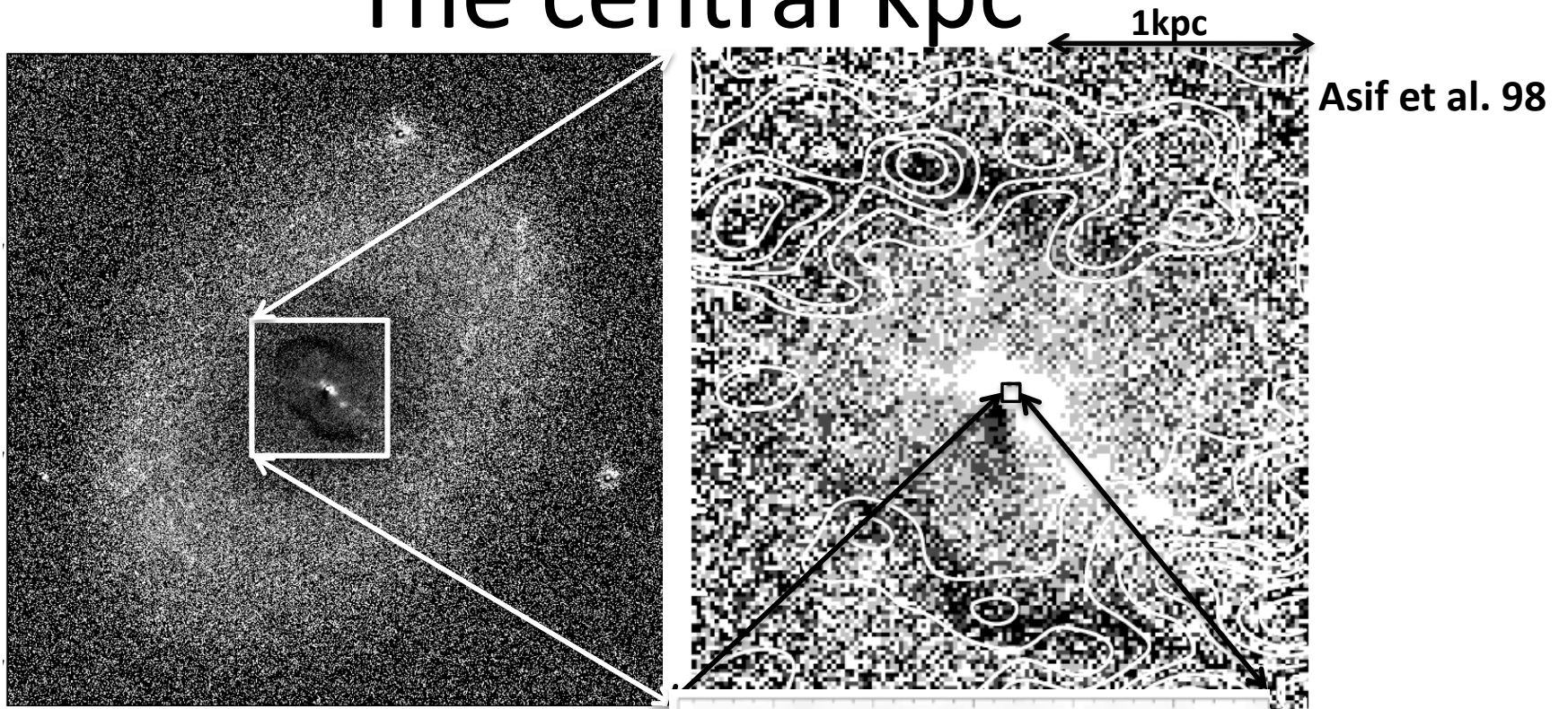
Dumas Gaelle, Eva Schinnerer (MPIA)
Carole Mundell (ARI, Liverpool)

NGC4151

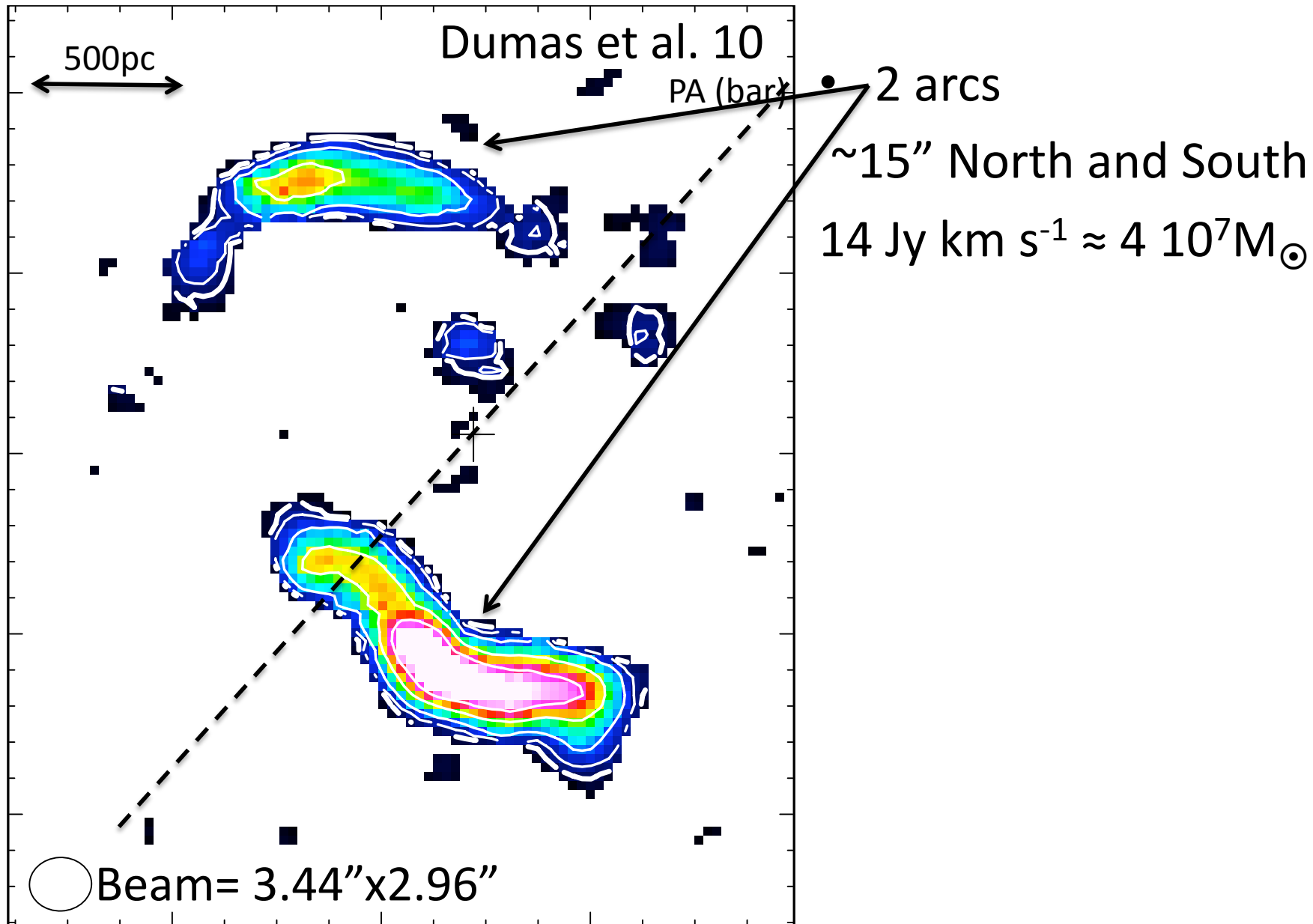
- Nearby spiral galaxy, stellar bar (3'x2'), thin arms
- Prototype Seyfert 1 AGN



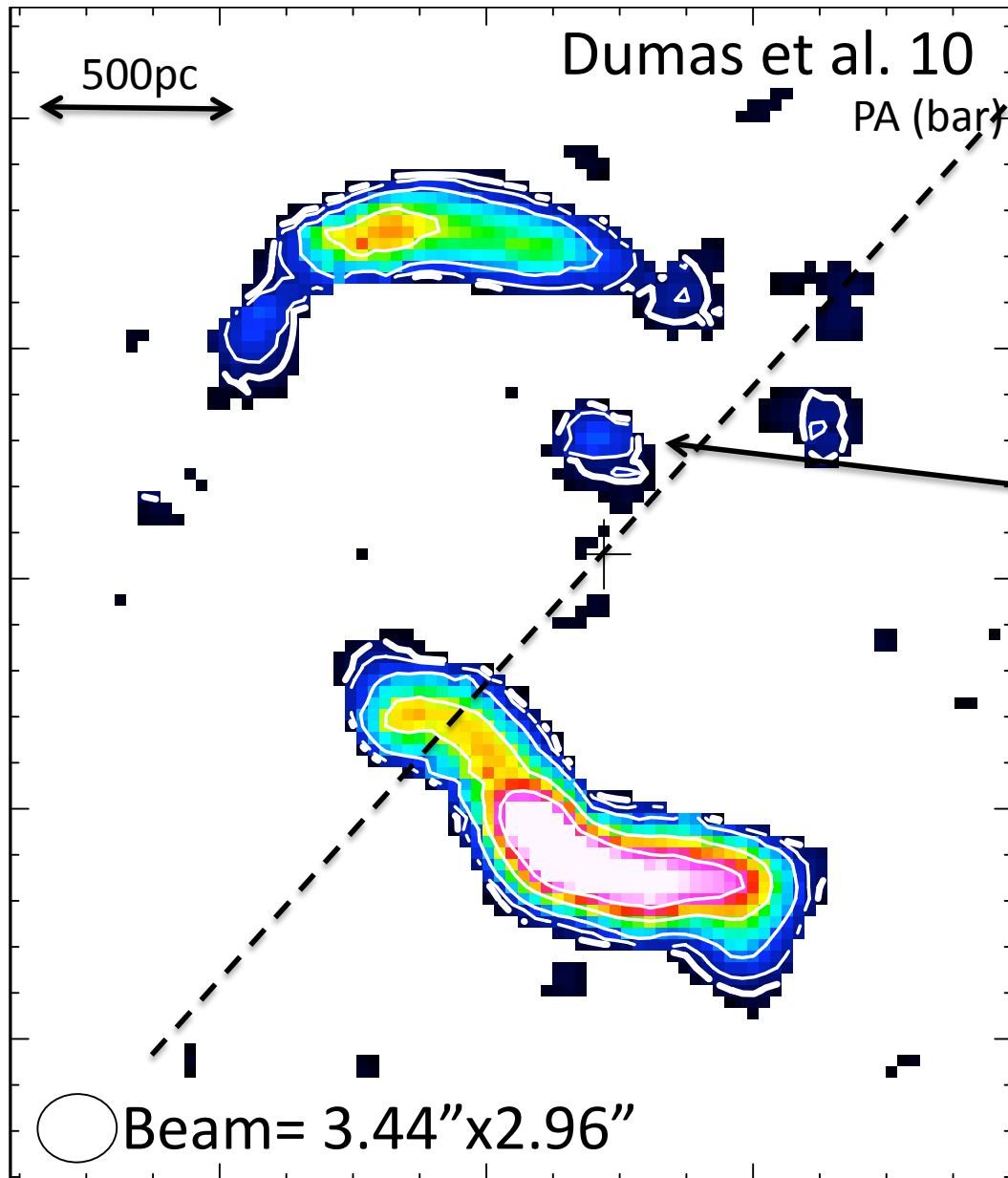
The central kpc



CO distribution

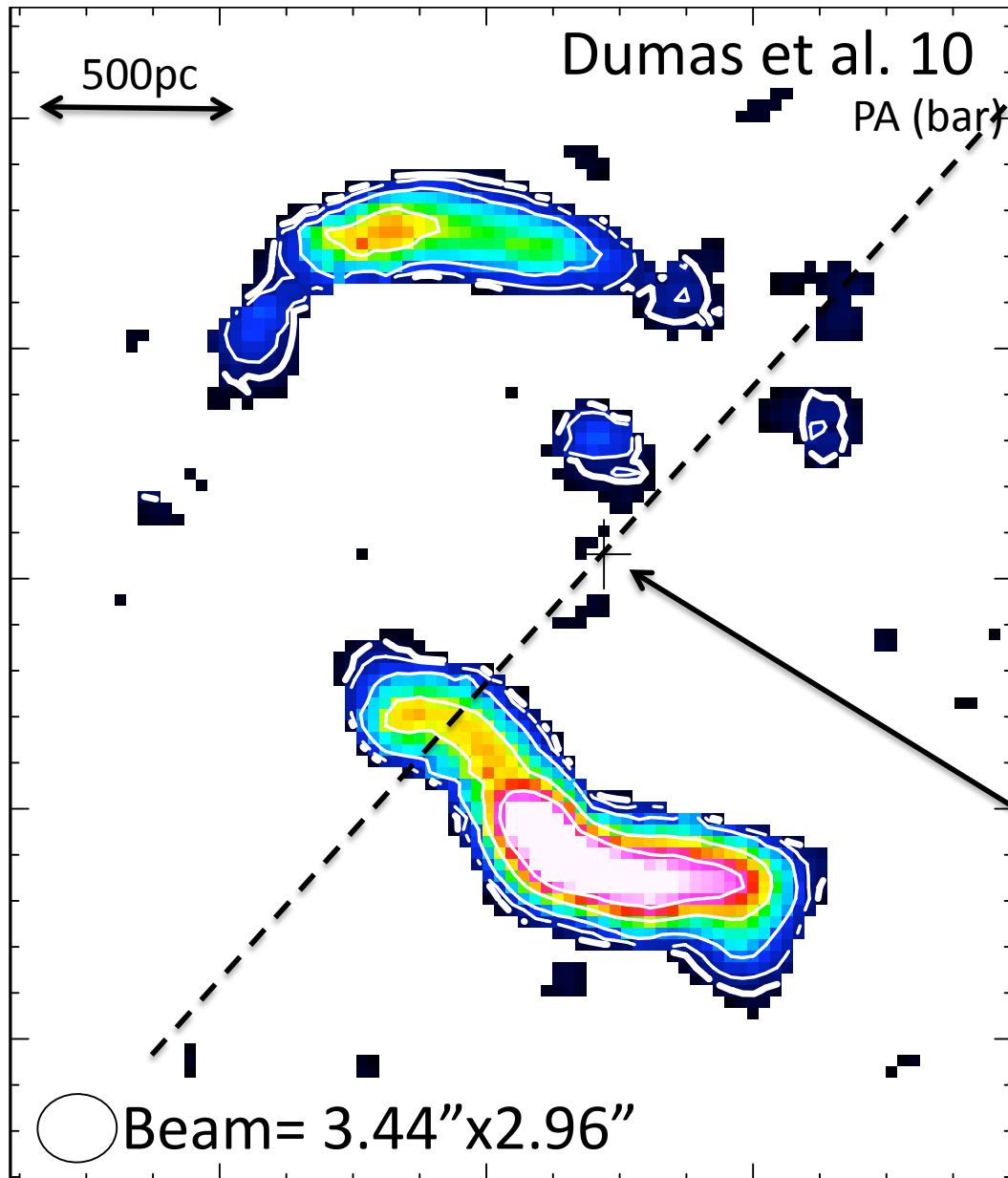


CO distribution



- 2 arcs
~15'' North and South
 $14 \text{ Jy km s}^{-1} \approx 4 \cdot 10^7 M_{\odot}$
- central clump
~3'' North
 $0.4 \text{ Jy km s}^{-1} \approx 12 \cdot 10^6 M_{\odot}$

CO distribution



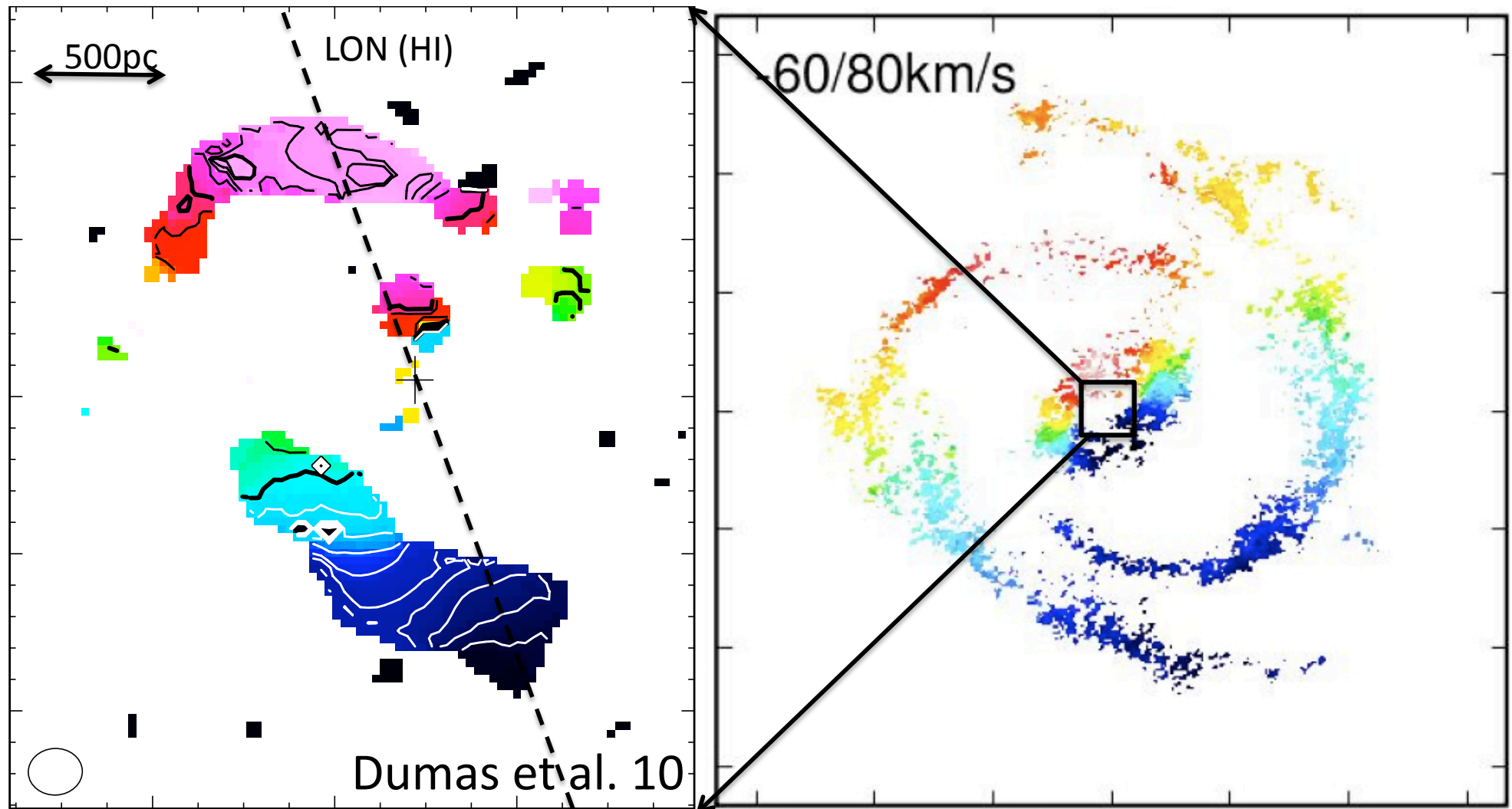
- 2 arcs
~15'' North and South
 $M(\text{H}_2) \approx 4 \cdot 10^7 M_\odot$
- central clump
~3'' North
 $M(\text{H}_2) \approx 12 \cdot 10^6 M_\odot$
- No CO(1-0) in the central
3'' , $M(\text{H}_2) < 10^5 M_\odot$
(NIR H_2 infers $10^7 - 10^9 M_\odot$, Storchi-Bergmann et al. 09)

CO kinematics

$V_{\text{sys}} = 995 \text{ km s}^{-1}$

CO(1-0) velocity field
Color scale: -60 km s^{-1} to $+90 \text{ km s}^{-1}$

HI velocity field
(Mundell et al. 99)

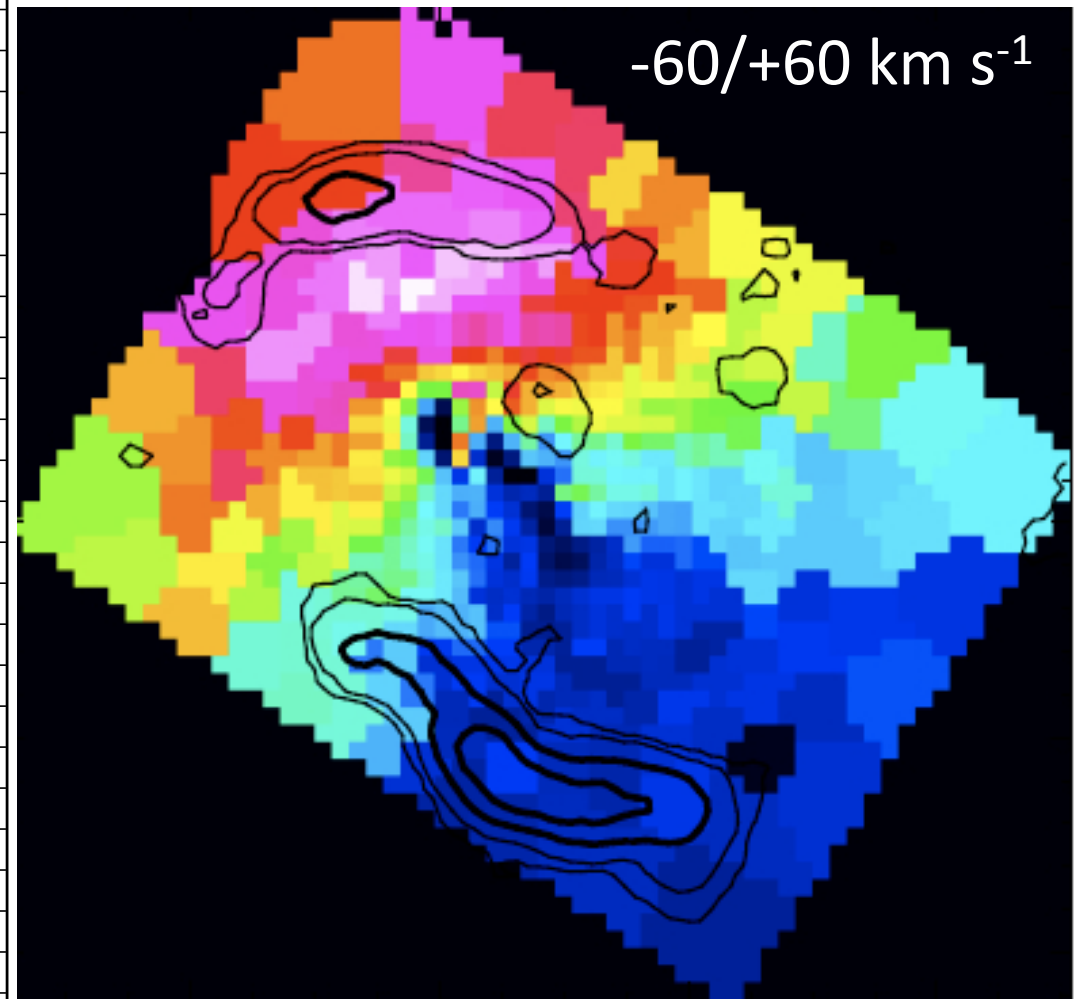
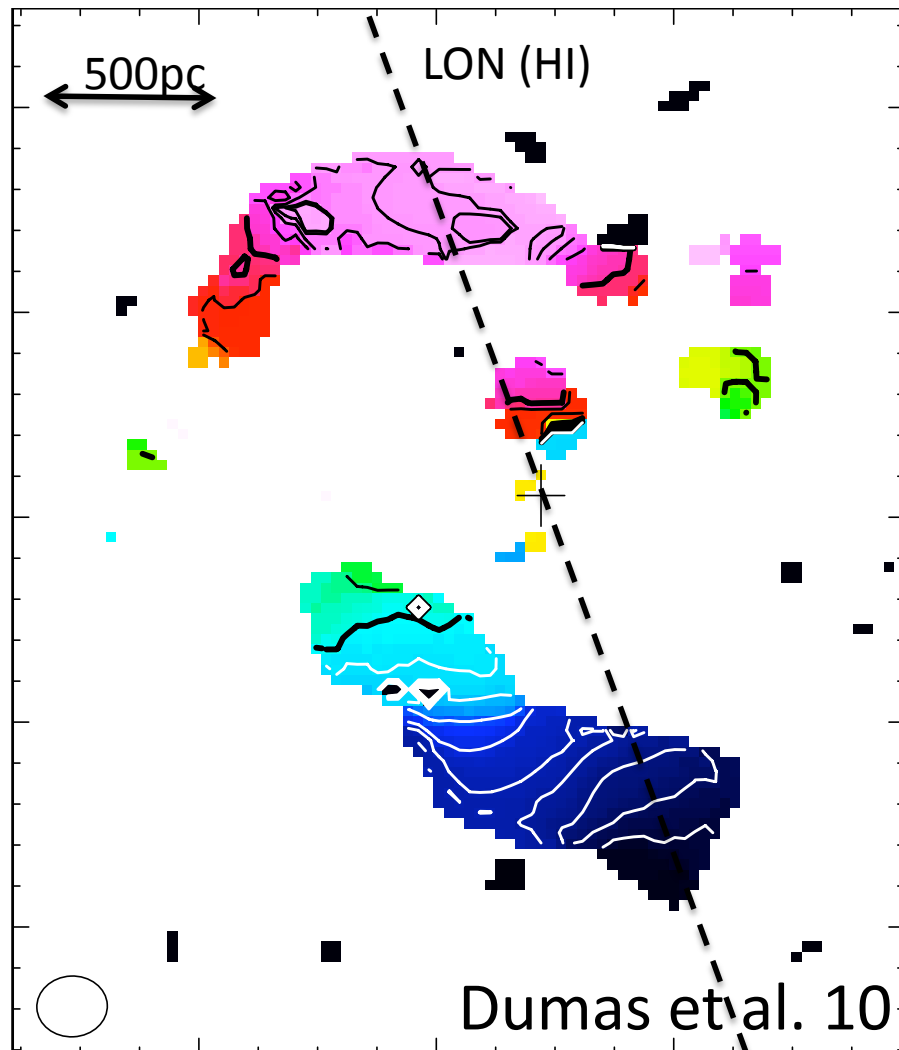


CO kinematics

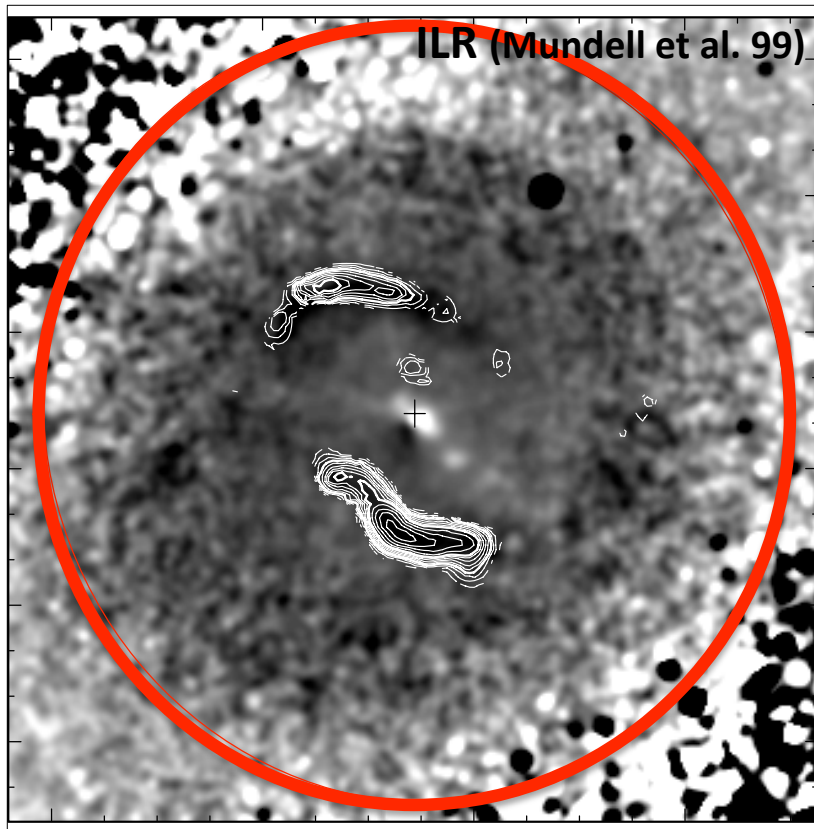
$$V_{\text{sys}} = 995 \text{ km s}^{-1}$$

CO(1-0) velocity field
Color scale: -60 km s^{-1} to $+90 \text{ km s}^{-1}$

Stellar velocity field
(Dumas et al. 07)



Conclusions



Dumas et al. 10

- CO(1-0) arcs coincide with the dust ellipse/HI lanes
- Distribution and kinematics in a bar/oval potential
- No CO in the central 150pc
 - NIR H₂ good tracer of cold gas near an AGN?
 - AGN alter the ISM chemistry?