

GLT observations of AGN fuelling reservoirs

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AGN fuelling

Need to provide mass rates $\sim 10^{-3} - 10 M_{\text{sun}}/\text{yr}$ towards the black hole.

Reservoir of cold molecular gas may provide these rates. Are there signs of fuelling?

AGN fuelling

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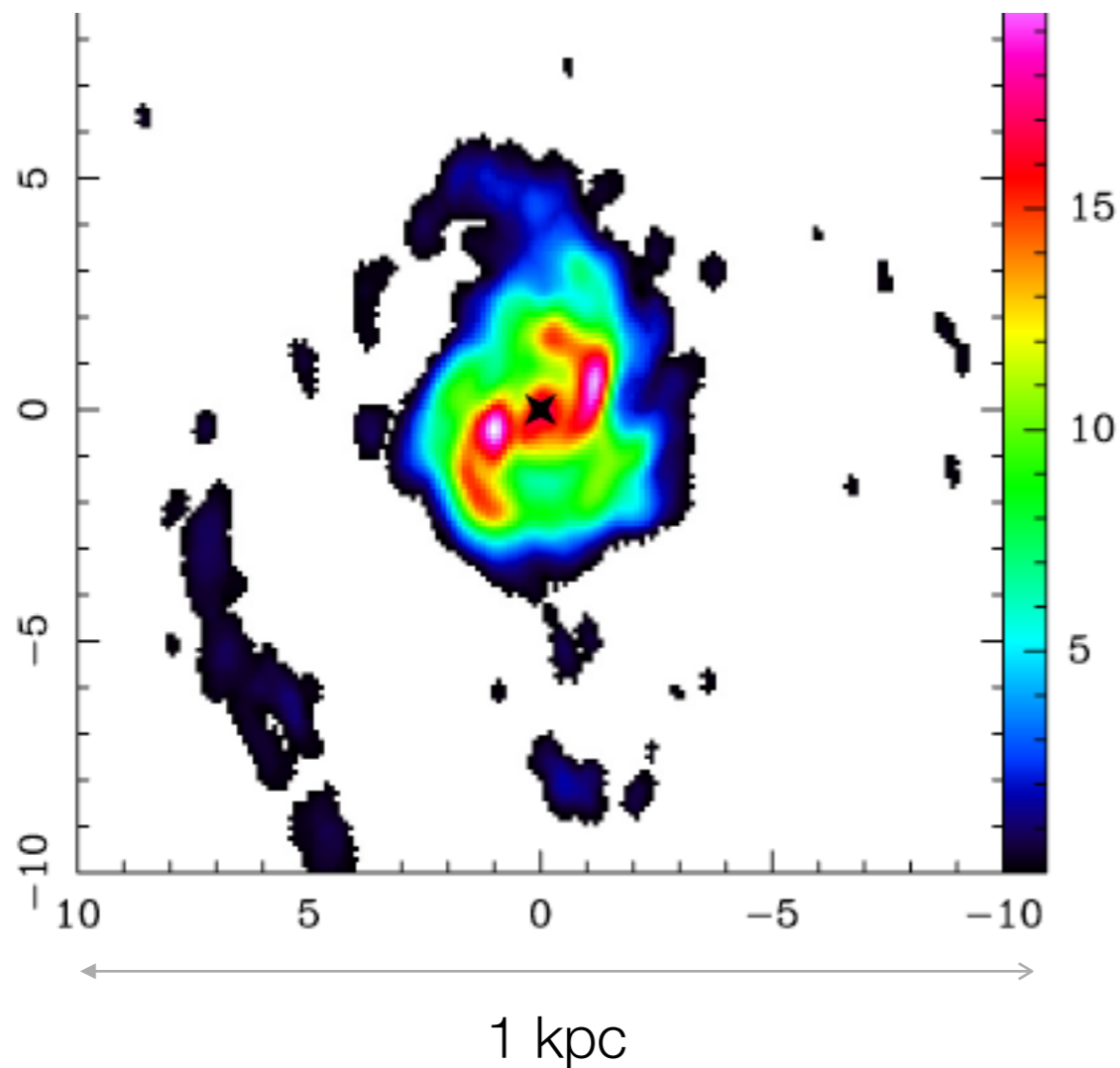
Reservoir of cold molecular gas may provide these rates. Are there signs of fuelling?

Observations at low redshift:

- NUGA CO survey (IRAM PdBI at ~ 100 pc resolution) - evidence for inflows in 1/3 of the sources
- IFU near-IR observations (difference between active and quiescent galaxies is in $< \sim 200$ pc)

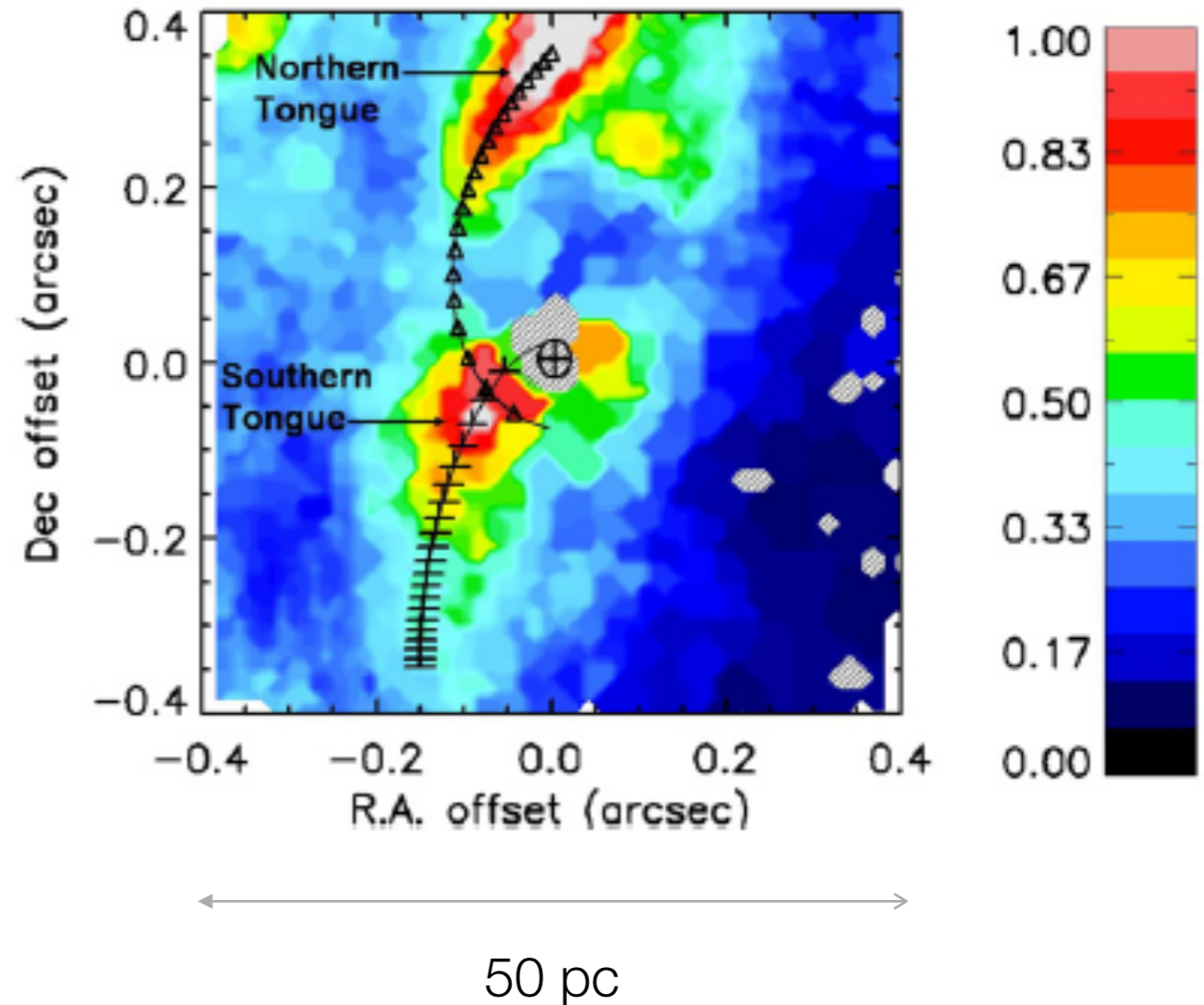
Molecular gas reservoirs: inflows and outflows

NGC 1566 - CO(3-2)



Combes et al. 2014

NGC 1068 - H₂



Muller-Sanchez et al. 09

Submm + Integral field spectroscopy data

Near-infrared

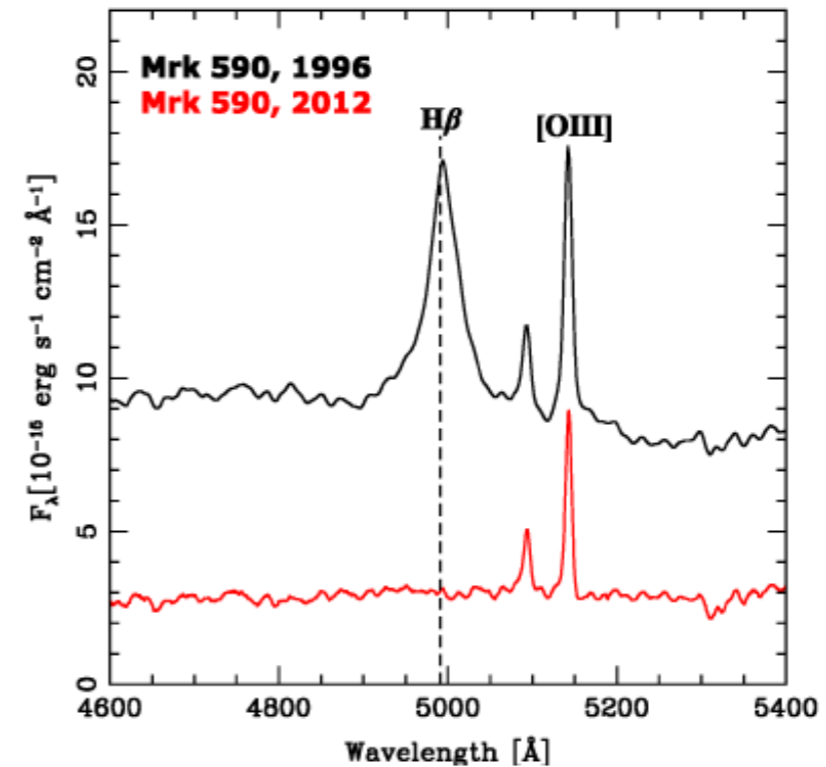
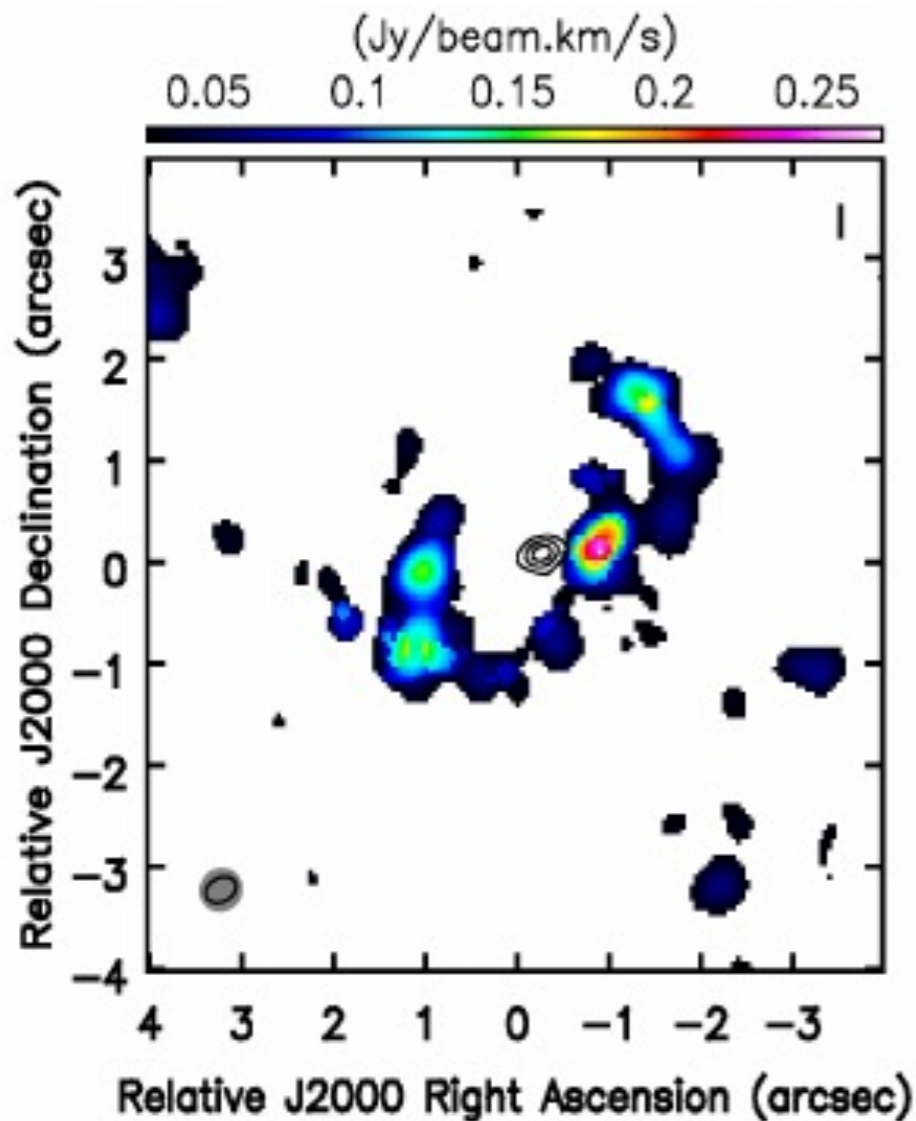
- Map hot molecular gas ($T \sim 2000$ K)
- Stellar potential/stellar population
- Ionised gas dynamics (possible outflows)

Submillimeter

- Cold molecular gas ($T \sim 10 - 100$ K)
- Better understanding of the molecular gas reservoir

The case of Mrk 590

Ring of CO (3-2) emission



- H $_2$ is present in the centre - may be a better tracer of molecular gas
- IFU IR data provides tracers for molecular and ionised gas and stellar kinematics

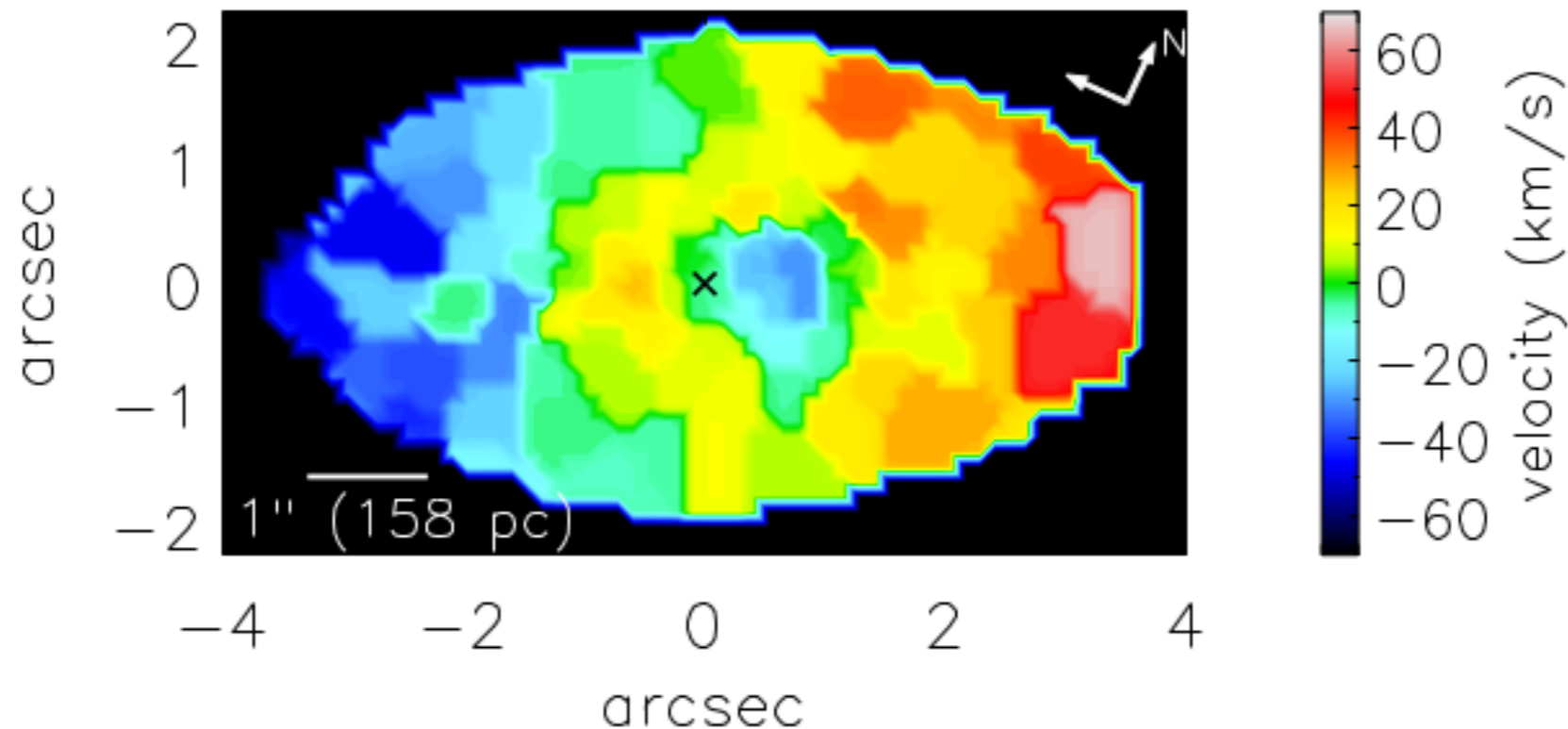
Possible targets for CO measurements

- Local AGN (various activity levels) and matched quiescent galaxies
- Galaxies with kinematically decoupled cores

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MCG—6-30-15 - Stellar velocity field



The role of GLT

- Science case: Molecular gas reservoirs in AGN hosts
- Many low-redshift AGN available
- Broader scope when matched with IFU data
- GLT will provide a test for the presence of cold molecular gas
- Can be followed up to look for inflow/outflow structures