TESI DAY - Dec 01 2017 Carlotta Gruppioni (INAF-OABO)

1. The evolving far-IR Luminosity Function: the last word from the deepest super-deblended Herschel catalogue *Relatore DIFA: Andrea Cimatti*

2. X-ray properties of IR-selected AGN at the peak of black hole accretion activity (z~1.5-2) *Relatore DIFA: Cristian Vignali*

3. ISM properties (X-ray dissociation regions versus shocks) and AGN fueling in the innermost regions of the local Seyfert NGC1194 through CO and SiO emission with ALMA *Relatore DIFA: Francesca Pozzi* 1. The evolving far-IR Luminosity Function: the last word from the deepest super-deblended Herschel catalogue *Relatore DIFA: Andrea Cimatti*



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Still a large spread in data at z>2-3: new super-deblended Herschel catalogue in COSMOS allowing reliable photometry for galaxies in FIR+mm bands X-ray properties of IR-selected AGN at the peak of black hole accretion activity (z~1.5-2)
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Large variety of IR SEDs :

Many (\geq 50%) show the presence of AGN



2. X-ray properties of IR-selected AGN at the peak of black hole accretion activity (z~1.5-2)



Deep X-ray and ALMA data in the GOODS and COSMOS fields:

Study X-ray and mm properties of SF-AGN dominating at the epoch of AGN and SF activity peak

3. ISM properties (X-ray dissociation regions versus shocks) and AGN fueling in the innermost regions of the local Seyfert NGC1194 through CO and SiO emission with ALMA *Relatore DIFA: Francesca Pozzi*

10% of galaxies in the local universe host a Seyfert nucleus





Seyfert Galaxies

Unusual spiral galaxies:

- Very bright cores
 - Emission line spectra
 - Variability: ~ 50% in a few months

Most likely power source:

Accretion onto a supermassive black hole $(\sim 10^7 - 10^8 M_{sun})$



3. ISM properties (X-ray dissociation regions versus shocks) and AGN fueling in the innermost regions of the local Seyfert NGC1194 through CO and SiO emission with ALMA



ALMA is now providing unprecedented insights in the innermost regions of Seyfert galaxies, where the effects of the presence of the BH starts influencing the surrounding gas physics and motion.

CO line transitions trace the H2 molecular gas reservoire, feeding the BH and forming stars

CO line distribution (Jy beam⁻¹)

CO line velocity field (km s⁻¹)



3. ISM properties (X-ray dissociation regions versus shocks) and AGN fueling in the innermost regions of the local Seyfert NGC1194 through CO and SiO emission with ALMA PDR + XDR fiducial model

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The CO transitions at different energies can be excited by different mechanisms: SF, AGN or shocks



In the local Seyfert NGC 1194 ALMA CO(2-1) and SiO (tracer of shocks) lines are available, allowing to unveil the mechanism responsible for the excitation