Optically selected type-2 AGN: Preliminary Results from zCOSMOS data

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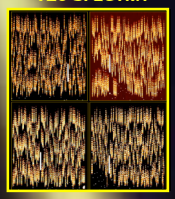
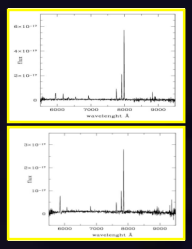
We present the new sample of type-2 AGN optically selected from the zCOSMOS survey. The sample consists of 258 sources and spans a redshift range where no other type-2 AGN sample optically selected are available. The work is still in progress.

THE z-COSMOS PROJECT

VIMOS @VLT

~120 SPECTRA

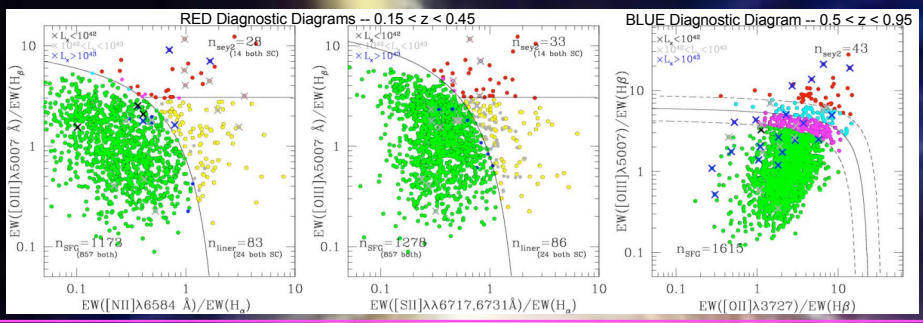




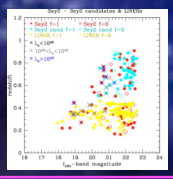
- *Redshift survey of 40,000 galaxies in the HST-COSMOS field*
- *600 hrs of observation with **VIMOS on VLT** started April 2005*
- *Spectra will be obtained for:*
  - *~25,000 galaxies at 0.3 < z < 1.0 **(BRIGHT SAMPLE)** with I_{AB} < 22.5*
  - *~10,000 galaxies at 1.4 < z <2.5 **(DEEP SAMPLE)** with B_{AB} < 25.0 (color selected)*
  - *Extra targets from XMM, GALEX and radio catalogue*
- *Goals:*
  - *Redshift Survey to identify and characterize environment*
  - *Accurate census of galaxy populations*
  - *Targetted AGN & X-ray sources*

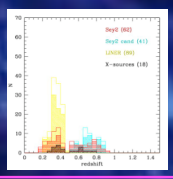
SAMPLE SELECTION

The optical spectra of type-2 AGN don't show the characteristic broad lines typical of type-1 AGN. Their spectra appear similar to the Star forming galaxy spectra. For this reason, to distinguish between type-2 AGN and SFG we used the **Diagnostic Diagrams** which use line ratios to determine the ionizing source responsible for the emission line spectrum.
In figures: Red circle: Sey2, **Yellow circles**: LINER, **Green** circles: SFG. Crosses mark X-ray (XMM) detected objects (black: $L_x<10^{42}$, grey: $10^{42} < L_x<10^{43}$, blue: $L_x>10^{43}$)



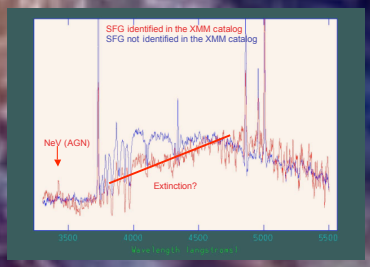
- The AGN sample consists of 258 objs @ 0.15 < z < 0.95
  81 Seyfert-2, 55 Sey-2 candidate and 122 LINERs.
- First sample of type-2 AGN at high redshift
- Some of them are detected by XMM





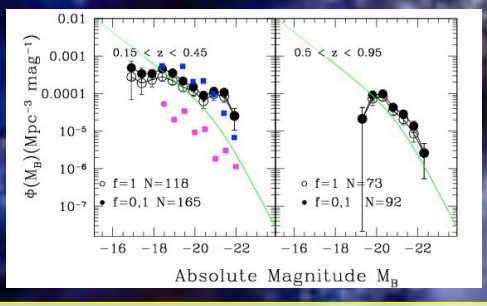
COMPARISON BETWEEN OPTICAL AND X PROPERTIES

- 52 of the analyzed sources are XMM detected (crosses)
  18 of them are optically classified as AGN while 34 as SFG.
- In the **RED** Diagnostic Diagrams, most of the X-ray sources lie in the Sey-2 / LINER region or at least close to the AGN/SF separation.
- In the **BLUE** Diagnostic Diagrams they seem to lie in a different region of the plane. Their position can be explained as:
  a) Their emission lines are dominated by extremely powerful starburst galaxy (but Lx>10^{43} for most of them)
  b) They are composite Starburst-AGN objects



The composite spectrum of SFG with X-ray counterpart shows:
- evidence of the presence of the AGN (NeV)
- a redder continuum, probably due to galactic extinction (hypothesis b)

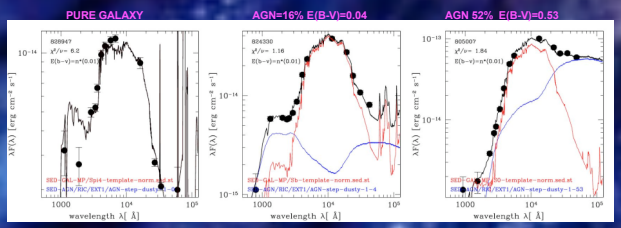
LUMINOSITY FUNCTION



Comparison (local samples): Palomar Sey sample (45 type-1+type-2) @ z~0
CfA Sey-2 sample (23) @ z~0
SDSS best fit LF for Sey-2 @ z<0.13

- First sample of type-2 AGN at high redshift
- Compared to the model derived by Hao et al. at lower redshift (z<0.13) from the SDSS sample, our LF data points suggest that the number of faint sources decrease going from z~0 to z~0.3 while the number of bright sources increase. The extrapolation of the Hao's model fit indeed overestimate the faint part of our luminosity function and underestimate the bright part.
- At higher redshift (z~0.7) the excess of bright sources disappears and the faint part of the LF is not well constrained to see a possible trend.
- A comparison with the luminosity function of the total galaxy sample shows that the fraction of galaxies that shows AGN activity is ~5% at these redshifts.
- A [OIII] line luminosity function will give us more constrain on the AGN evolution

SED FITTING



- AGN contribution to the continuum in the observed wavelength range:
  - 24% of them show a pure galaxy SED
  - 76% of them require a contribution from the AGN { 30% AGN contribut. >30%; 14% AGN contribut. >50% }
- Host galaxies type : { 71% Disk galaxy; 25% Early type galaxy; 4% Irregular }

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