

M. Brusa (1), F. Civano (2), A. Comastri (3), M. Salvato (4) & the XMM-COSMOS team

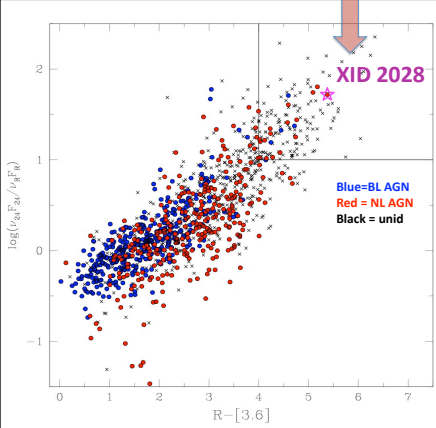
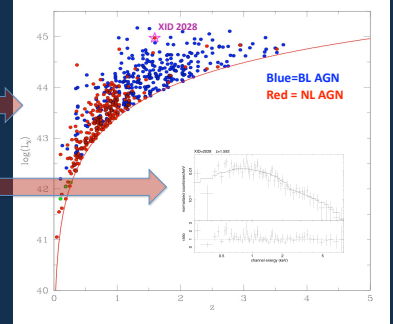
(1) MPE – Germany, (2) CfA – US, (3) INAF-OABO – Italy, (4) IPP - Germany

ABSTRACT

The most recent models of AGN galaxy coevolution predict an enhancement in the bolometric luminosity and column density, coupled with a low B-band luminosity (and therefore red optical to near infrared colors, and high X/O and MIPS/O flux ratios) for objects that are experiencing a transition from being starburst dominated to AGN dominated by (see e.g. Menci et al. 2008, Hopkins et al. 2008). The same models predict also strong outflows from AGN and/or stellar winds. We present the X-ray, optical and NIR properties of the XMM-COSMOS source XID2028, a high- z ($z=1.592$) obscured QSO possibly caught in such a peculiar, transition phase.

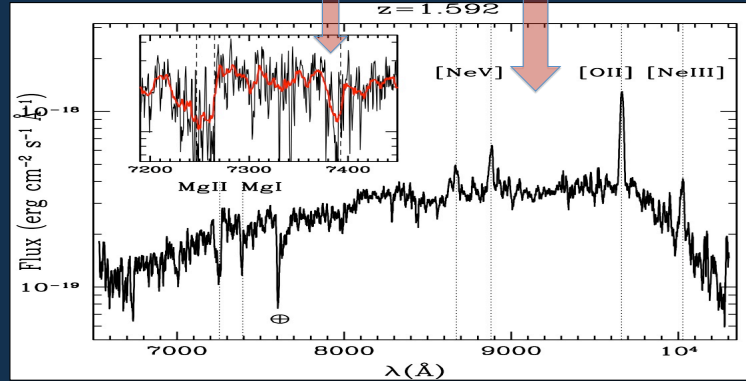
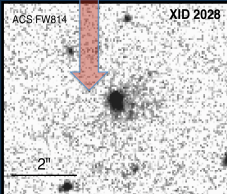
1) SELECTION of XID 2028

- the brightest XMM-COSMOS source, $L_x \sim 10^{45}$ erg/s, spectroscopically identified as a narrow line object ($z=1.592$) in Brusa et al. (2010).
- It shows substantial X-ray absorption ($N_H \sim 10^{22}$ cm $^{-2}$, see also Mainieri et al. 2007 & poster 3.9 on Type 2 QSO in XMM-COSMOS)
- Further classified as an Extremely Red Object (ERO, $R-K=6.5$) and Dust Obscured Galaxy (DOG, $MIPS/O > 1000$), fulfilling the criteria for the selection of obscured quasars presented by, e.g. Fiore et al. (2009).



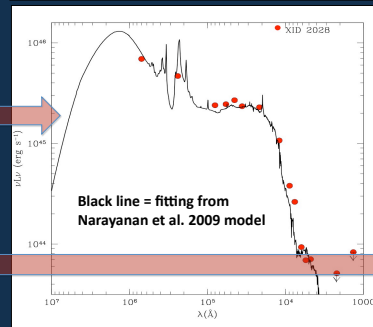
2) OPTICAL SPECTRUM & MORPHOLOGY

- Keck/DEIMOS spectrum: red, early type continuum plus strong AGN emission lines ([NeV] doublet) and SF features (OII, $SFR \sim 10^3 M_\odot$ /yr)
- Evidence of outflowing material (~ 300 km/s) from the blueshifted MgI and MgII complex absorption.
- HST/ACS disturbed morphology (point-like nucleus + extended component)



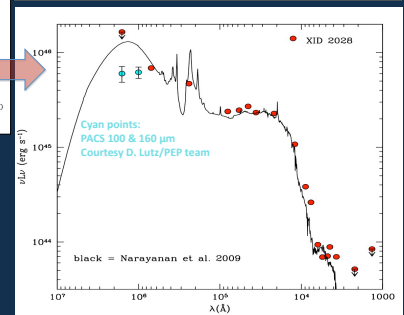
3) SED FITTING

- More than 15 photometric datapoints from far infrared to GALEX (red circles)
- Classified as HyLIRG ($L_{IR}(70\mu m) > 10^{13} L_\odot$)
- $SFR(IR) \sim SFR(OII)$ (likely upper limit)
- Stellar mass $M_* \sim 5 \times 10^{11} M_\odot$ from 2 component (galaxy+AGN) SED fitting
- Overall SED amazingly well fit by numerical templates resulting from theoretical models for AGN and galaxy co-evolution developed for $z \sim 2$ DOGs (from Narayanan et al. 2009) but....
- (NEW !!) Herschel/PACS data points suggest a weaker FIR emission than expected!!!
- complete SED sampling for large obscured AGN samples, and more modeling needed!



ACCRETION PARAMETERS

- $L_{bol} \sim 2 \times 10^{46}$ erg/s (from SED)
- $M_* \sim 6 \times 10^8 M_\odot$ (from M_* via Merloni+2010)
- $L/L_{Edd} \sim 0.2$
- Simulations also provide:
 - $M_* \sim 5 \times 10^{11} M_\odot$
 - $M_* \sim 7-10 \times 10^8 M_\odot$



All figures and material from: Brusa et al. (2010), ApJ, 716, 348

Other references:

Fiore et al. 2009, ApJ, 693, 447; Hopkins et al. 2006, ApJS, 163, 1; Mainieri et al. 2007, ApJS, 172, 368; Menci et al. 2008, ApJ, 686, 219; Merloni et al. 2010, ApJ, 708, 137; Narayanan et al. 2009, MNRAS, 400, 1919

Questions/comments:
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