

On the dust and gas content of high-redshift galaxies hosting obscured AGN in the CDF-S

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Submillimeter Galaxies (SMGs) at high redshift are among the best targets to investigate the early evolutionary phases in the lifetime of massive systems, during which large gas reservoirs sustain vigorous star formation and efficiently feed the central, buried Super Massive Black Hole (SMBH), until it enters into luminous Quasar (QSO) phase, quenching the star formation.

I will present the analysis of new ALMA band 4 (1.8-2.4 mm) data of six obscured QSOs ($\log N_{\text{H}} > 23$) hosted by SMGs at redshift > 2.5 in the 7 Ms Chandra Deep Field South (CDF-S), and I will show their properties in terms of continuum emission and high-J CO transitions. Sizes and masses of the galaxies are measured to estimate whether and to which extent the host ISM may contribute to the nuclear absorption and describe the role of these systems in the galaxy/BH co-evolution scenario. I will also discuss the kinematics and morphology in some of these objects in order to unveil the dynamical structure of the high-z AGN hosts.

Affiliation

Alma Mater Studiorum - Università di Bologna

Primary author: D'AMATO, Quirino (DIFA - Univ. Bologna; INAF - OAS Bologna)

Co-authors: Prof. VIGNALI, Cristian (Dipartimento di Fisica e Astronomia, Università di Bologna); Dr GILLI, Roberto (Istituto Nazionale di Astrofisica (INAF)); Dr MASSARDI, Marcella (Italian ARC node, CNR - Bologna)

Presenter: D'AMATO, Quirino (DIFA - Univ. Bologna; INAF - OAS Bologna)

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