Talk ID: Sci

Submitted by: Eleonora Sani

Partner: INAF

Instrument (for science papers): LBC/LUCI

Galaxies and AGN observations with LBT: results, issues and perspectives

E. Sani, L. Magrini, R. Gilli

Abstract

The highly performing instruments at LBT are producing remarkable results in the field of extragalactic astronomy.

I will show the results obtained from LUCI-AO imaging of NGC 2273, spectroscopy of a galaxy cluster at z~1.4, and LBC observations of the fields around four QSOs at z~6.

NGC 2273 is a local AGN where we are able to identify, for the first time, a 3-armed spiral structure possibly playing a key role in the BH feeding process.

For the z~1.4 galaxies, we can test the fundamental metallicity relation (FMR) in the case of a rich cluster environment with LUCI-MOS. I also report the spectroscopic analysis of a bright AGN, belonging to the cluster, which shows a significant outflow of gas.

With LBC r-, i- and z-band deep imaging we cover a field of 7x8 physical Mpc around four z~6 QSOs.

This allows to test the current model of structures formation: high redshift QSOs are supposed to reside in the most massive dark matter halos, thus tracing over-densities of star-forming galaxies. At least half of the studied fields show significant over-densities of i-band dropouts when compared to blank fields.

Finally, I will discuss issues we had during observations and data analysis, as well the improvements needed to boost the galaxy-AGN studies with LBT facilities.

Talk ID: Sci

Submitted by: Benjamin Clement

Partner: AZ

Instrument (for science papers): MODS/LUCI

Spectroscopic Survey of Gravitationally Lensed z ~ 7 Galaxies in Massive Galaxy Cluster Fields

Benjamin Clement, Eiichi Egami, Gregory Walth

Abstract

Gravitationally lensed high-redshift galaxies are powerful for constraining the abundance and properties of lower-luminosity galaxies in the reionization era. Here, I present the results from a spectroscopic survey of strongly lensed galaxies in massive cluster fields. Using Keck/LRIS, MMT/Red Channel Spectrograph, LBT/MODS, LBT/LUCI and Magellan/IMACS, our campaign resulted in the spectroscopic identification of several galaxies at 5.5 < z < 7. Candidates for follow-up were selected by applying the dropout technique to the extremely deep HST/ACS and HST/WFC3 data obtained by several HST programs including the CLASH MCT program and the Frontier Fields program. By combining the optical and near-infrared data with deep Spitzer/IRAC imaging, one can map out the spectral energy distribution from the rest-frame UV to optical and derive physical properties of this faint and distant galaxy population. However, it is now suspected that IRAC 3.6/4.5 um broad-band measurements of z>6 galaxies may be significantly affected by the presence of strong nebular emission lines such as H-alpha, H-beta, and [O III] 4959/5007 Angstrom lines. Most notably, at 6.7<z<6.8, H-beta and [O III] lines are inside the 3.6 um band while the 4.5 um band is line-free. I will focus the discussion on two galaxies at z>6.7 with very blue [3.6] â€“ [4.5] colors that cannot be explained by the stellar continuum light. This allows us to provide for the first time a clean measurement of the combined strength of these nebular emission lines at high redshift.

Talk ID: Sci

Submitted by: Greg Walth

Partner: AZ

Instrument (for science papers): LUCI/MODS

A Spectroscopic Study of Gravitationally Lensed Herschel Galaxies

Walth, Egami, Clement, Rawle, Rex, Richard

Abstract

We have been conducting a spectroscopic survey using LUCI and MODS, with the Large Binocular Telescope, of gravitationally lensed Infrared/submillimeter galaxies detected by Herschel around massive galaxy clusters. By using massive galaxy clusters as a gravitational lens allows us to go below the confusion limit in Herschel and detect fainter galaxies that would normally be undetected. With gravitationally lensed galaxies we can start to probe the highest redshift IR luminous galaxies detectable with Herschel and characterize the properties of their ISM, AGN activity, dust attenuation and star formation without the use of stacking.

In this talk I will focus on results from the spectroscopic survey of the

most luminous (>100 mJy) lensed galaxies discovered by the Herschel Lensing Survey (PI: E. Egami). By targeting the most luminous lensed galaxies enables multi-wavelength (UV - Radio) follow-up of individual sources providing a glimpse into the nature of IR luminous galaxies at redshifts z = 2 - 5.

Talk ID: Sci

Submitted by: Andrea Grazian

Partner: INAF

Instrument (for science papers): LBC

The UltraViolet side of CANDELS with LBC/LBT: the Lyman continuum escape fraction of star forming galaxies at z~3

A. Grazian

Abstract

We have successfully executed a 2-year Strategic program to exploit the unique combination of area and efficiency of LBC at LBT to obtain ultradeep UV and optical imaging of the CANDELS/GOODS-North field. 40 hours of LBC net exposure time have been devoted to reach an unprecedented depth of 27.5, 27.3, and 28 mag (AB) in the U, B, and R-band filters, respectively, at 90% completeness level. We complement these exceptional data with wide and deep imaging in the CANDELS/EGS and COSMOS fields in the same filters but one magnitude shallower. Combining these data, we computed a stringent upper limit

(<5%) for the escape fraction of HI ionizing photons for star-forming galaxies of faint luminosities (L=0.2L*) at z~3. We are thus able to compute the contribution of these galaxies to the observed UV

background at z~3. We can conclude that galaxies brighter than L=0.2L* are unable to maintain the Universe reionized and that the plausible

sources responsible of Reionization are faint galaxies or AGNs. We also show other scientific applications of these LBC deep data in the blue bands for the CANDELS fields.

Talk ID: Sci

Submitted by: Emanuele Giallongo

Partner: INAF

Instrument (for science papers): LBC

LBC Deep Imaging of Galaxy Clusters: Intracluster Light and Ultra-faint Lensed Galaxies

E. Giallongo

Abstract

We present the measure of the diffuse intracluster light (ICL) in the central core of the galaxy cluster CL0024+17 at z = 0.4 observed with the prime focus camera (LBC) at LBT.

An accurate flat background-subtracted image was obtained for the subsequent photometric analysis. The galaxy light contribution has been carefully removed within 200 kpc from the center to derive the average ICL intensity profile. The ICL/galaxy profile has then been compared with theoretical expectations in a simplified CDM scenario. The DM distribution derived from the ICL analysis has been found in good agreement with that derived from lensing analysis. An ongoing LBC program on two HST Frontier Fields clusters to look for intrinsically faint lensed galaxies will be briefly described.

Talk ID: Sci

Submitted by: Peter Garnavich

Partner: RC

Instrument (for science papers):

The LBT in the Era of Gravity Wave Detection

Peter Garnavich

Abstract

In the next three years Advanced LIGO and VIRGO will begin generating gravity wave transient alerts with decreasing positional uncertainty. Electromagnetic follow-up will be critical in understanding the physics of the transients and confirming their reality. In some ways GW transient study will be similar to the early days of GRB science except the error ellipses will be larger and the character of the bursts less predictable. Wide-field optical imaging is now common and likely to yield many variable sources in the GW error ellipses. Spectroscopic resources will be critical for sorting candidate transients. LBT is an ideal telescope for optical/IR spectroscopy of transient candidates. But efficient and fast follow-up requires a cross-partner plan for target-of-opportunity observations needs to be developed. Further, the GW community plans to require signed agreements with groups interested in EM follow-up of the first GW triggers to avoid publication conflicts and other problems.