Leaking Lyman Continuum at z=1.4

The Nature of Super-Starbursts in the WiggleZ Dark Energy Survey

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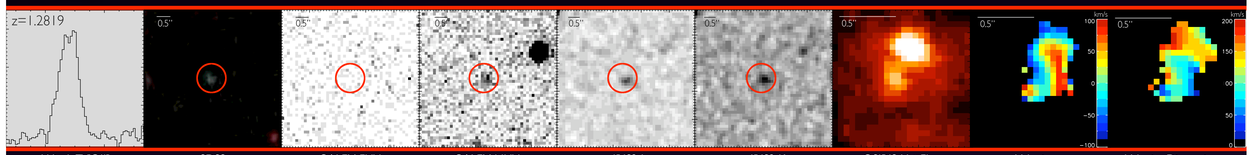
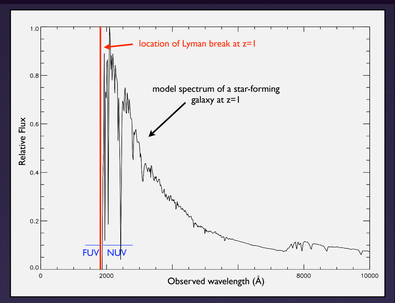


Surprise!

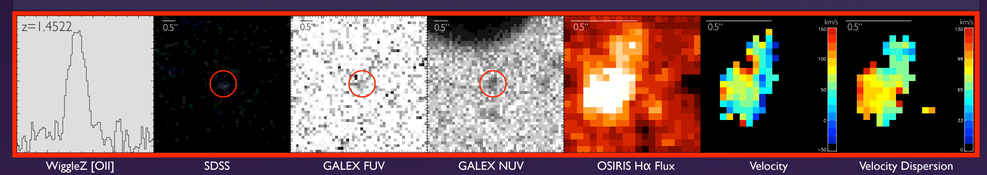
This galaxy emits flux blueward of the Lyman Break!

This WiggleZ galaxy at z = 1.452 has a reliable (12ksec) FUV detection with GALEX and has a SFR of 300 $M_\odot$/yr. This redshift puts the observed FUV band blueward of the Lyman limit, where we do not expect flux to be observed (right).

The observed UV color of (FUV−NUV)=1 corresponds to a Lyman continuum escape fraction of nearly 100% assuming a zero-age starburst SED from Bruzual & Charlot.



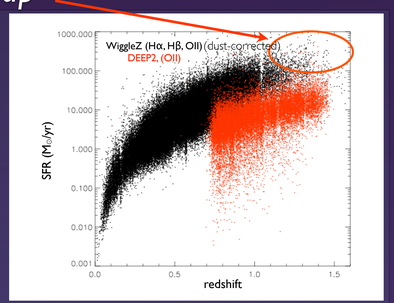
The source of UV continuum radiation that keeps the IGM ionized at z < 4 is still unclear. It is important to find as many galaxies as possible with Lyman continuum flux at any redshift to better understand the physical processes affecting the escape of Lyman continuum photons from galaxies. We propose to search for Lyman continuum radiation from a sample of 24 galaxies at z > 1.2 with SFRs > 100 $M_\odot$/yr.



Super-Starburst Follow-up

An exciting discovery from WiggleZ is a long thin tail of high-z galaxies to z = 1.6. These UV selected galaxies show strong [OII] emission and have star-formation rates of 100–1000 $M_\odot$/yr.

We aim to obtain more kinematic maps with IFU spectroscopy and to examine the SFR - M_* relationship with J-K imaging.



Our goal is to distinguish between merging systems and monolithic star-formation via resolved kinematics. We will study a larger sample of analogous objects to those studied at z~3 at significantly lower redshift where $(1+z)^4$ surface brightness dimming is less severe.

WiggleZ Dark Energy Survey

The WiggleZ survey is a collaboration between the GALEX team and Australian astronomers that combines UV imaging with the AAOmega fibre spectrograph at the 4m Anglo-Australian Telescope. It will map ~200,000 UV-selected galaxies covering 1000 deg^2 at 0.5 < z < 1.

The main science mission is to study dark energy by tracing Baryon Acoustic Oscillation features in the large-scale structure and measure percent distances to high-redshift.

The survey is 75% complete with data release 1 just a few weeks away!

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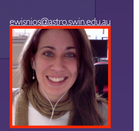

REFERENCES: Blake et al. 2009, Bruzual & Charlot 2003, Cowie et al. 2008, Glazebrook et al. 2006, Shapley et al. 1995, Siana et al. 2007