analysis we assembled a catalog of new LMC stellar clusters.

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GALAXIES AT HIGH REDSHIFT

F. E. Bauer[1]

Recent years have seen tremendous progress in finding and charactering star-forming galaxies at high redshifts across the electromagnetic spectrum, giving us a more complete picture of how galaxies evolve, both in terms of their stellar and gas content, as well as the growth of their central supermassive black holes. A wealth of studies now demonstrate that star formation peaked at roughly half the age of the Universe and drops precariously as we look back to very early times, and that their central monsters apparently growth with them. At the highest-redshifts, we are pushing the boundaries via deep surveys at optical, X-ray, radio wavelengths, and more recently using gamma-ray bursts. I will review some of our accomplishments and failures.

Telescope have enabled Lyman break galaxies to be robustly identified, but the UV luminosity function and star formation rate density of this population at $z = 6 - 8$ seems to be much lower than at $z = 2 - 4$. High escape fractions and a large contribution from faint galaxies below our current detection limits would be required for star-forming galaxies to reionize the Universe. We have also found that these galaxies have blue rest-frame UV colours, which might indicate lower dust extinction at $z > 5$. There has been some spectroscopic confirmation of these Lyman break galaxies through Lyman-α emission, but the fraction of galaxies where we see this line drops at $z > 7$, perhaps due to the onset of the Gunn-Peterson effect (where the IGM is opaque to Lyman-α).

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METAL-POOR ACTIVE GALACTIC NUCLEI

I. C. Bicalho[1] and E. Telles[1]

Active galaxies are considered to be metal-rich, with metallicity ranging from solar to slightly supersolar. This is due to the fact that the active galaxy nuclei are usually found in supermassive galaxies. We aim to test this statement by obtaining near infrared spectra of peculiar dwarf galaxies to see if they host an AGN. We present the results based on analysis of data from Gemini Near Infrared Integral Field Spectrograph (NIFS) of the metal-poor HII galaxy SDSS J1047+0739 ($12 + \log$ O/H $\sim 7.85 \pm 0.02$). The spectrum of this galaxy shows strong permitted emission lines with extended wings, which is atypical for HII regions. We use unconventional methods such as PCA tomography due to the benefits that it provides to data cube analysis. We are studying the kinematics of the nuclear region and the regions of star formation surrounding it, mostly through the Paschen-α and He lines. We find that the broad line emission comes only from the unresolved central region. The results of this analysis agree well with the existence of an AGN in this metal-poor galaxy.

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ANALYSIS OF THE VELOCITY DATA OF CLUSTER A562

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We present a recent study of the dynamics of the cluster of galaxies Abell 562 intended to determine if ram pressure is responsible for the jet bending in the Wide-Angle Tailed (WAT) radio source located in the central elliptical galaxy. Given the properties of the jet and of the intra-cluster medium (ICM), a relative velocity between the galaxy and the ICM greater than 800 km/s is needed for this mechanism to bend the WAT jet. We find that the peculiar velocity of the WAT galaxy is 170±140 km/s which is not enough to produce the bending. This is based on the analysis of the velocity of 146 galaxy cluster members obtained with the Gemini Multi-Object Spectrometer (GMOS) at Gemini North. However, our analysis of these velocity data and archival Chandra data suggests that an off-axis merger occurred in this system. This type of merger typically produces bulk flow motions with peak velocities greater than 1000 km/s which should be enough to explain the bending of the jets.

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