A Search for Lyman Break Galaxies in the CDF-S Using Swift UVOT

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(Abridged) While the Swift satellite is primarily designed to study gamma-ray bursts, its ultraviolet and optical imaging and spectroscopy capabilities are also being used for a variety of scientific programs. In this study, we use the UV/Optical Telescope (UVOT) instrument aboard Swift to discover 0.5<z<2 Lyman break galaxies (LBGs). UVOT has covered ~266 arcmin^2 at >60ks exposure time, achieving a limiting magnitude of u<24.5, in the Chandra Deep Field South (CDF-S). Applying UVOT near-ultraviolet color selection, we select 50 UV-dropouts from this UVOT CDF-S data. We match the selected sources with available multiwavelength data from GOODS-South, MUSYC, and COMBO-17 to characterize the spectral energy distributions for these galaxies and determine stellar masses, star formation rates (SFRs), and dust attenuations. We compare these properties for LBGs selected in this paper versus z~3 LBGs and other CDF-S galaxies in the same redshift range (0.5<z<2), identified using photometric redshift techniques. The z~1 LBGs have slightly lower stellar masses compared to z~3 LBGs and slightly higher stellar masses compared to the z~1 CDF-S galaxies. Similarly, our sample of z~1 LBGs has SFRs (derived using both ultraviolet and infrared data, where available) nearly an order of magnitude lower than z~3 LBGs but slightly higher than the comparison z~1 sample of CDF-S galaxies. We find that our z~1 UV-dropouts have A_FUV higher than z~3 LBGs, but is similar to the distribution of dust attenuations in the other CDF-S galaxies. Using the GOODS-South multiwavelength catalog of galaxies, we simulate a larger and fainter sample of LBGs to compare their properties with those of the UVOT-selected LBG sample. We conclude that UVOT can be useful for finding and studying the bright end of 0.5<z<2.0 LBGs.

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