Confirming A Bar-Like Shape of sBzK Galaxies

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Last year, we presented the structural analysis of sBzK galaxies in GOODS-N field and showed that despite their Sérsic indices around one, their intrinsic shape is not a round disk as seen in the present-day disk galaxies, rather they show a bar-like shape. This time we try to confirm this result by conducting the structural analysis of sBzK galaxies in the GOODS-S field using the high-resolution ACS/F850LP and WFC3/F160W images. The images correspond to the rest-frame UV and optical wavelengths, respectively. The study in the rest-frame UV shows similar results to those of the sBzK galaxies in GOODS-N. Half of the sBzK galaxies in GOODS-S show a single component; a majority of them (65%) show n = 0.5-2.5. Similarly, most of the single-component objects in the rest-frame optical wavelength also show Sérsic indices around one. The intrinsic shapes are obtained by comparing distributions of apparent axial ratios to the triaxial model. The results in the rest-frame UV are in good agreement with those studied in the GOODS-N, confirming that the single-component sBzK galaxies have a bar-like shape rather than a round disk. In order to improve statistical accuracy in determining the intrinsic shape, we combine the samples from both GOODS-N and GOODS-S fields and find that the combined sample shows the same intrinsic shape as done for the sample in each field. Despite a large uncertainty of the intrinsic shape derived in the rest-frame optical wavelength, the intrinsic shape of the single-component sBzK galaxies is not likely to be a round disk as seen in the present-day disk galaxies.