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Detections of Lyman Continuum from LAEs at $z \sim 3.2$ through VLT/FORS Narrow-band Imaging

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Knowing the amount of ionizing photons from star-forming galaxies is of particular importance to understanding the cosmic reionization process. However, until very recently, only a few detections of Lyman continuum (LyC) from individual galaxies (including nearby galaxies) have been reported. Iwata et al. (2009) reported the detections of LyC from 7 Lyman break galaxies (LBGs) and 10 Lyman-α emitters (LAEs) in the proto-cluster field SSA22 at $z \sim 3.1$ through Subaru / Suprime-Cam narrow-band imaging and dramatically increased the number of LyC detections. They claimed that (1) some LBGs show significant spatial offsets between LyC and non-ionizing UV and (2) many LyC detections are so strong that they cannot be explained if we assume Salpeter-like IMF – much bluer spectrum would be required. One caveat is that SSA22 might be a special case, and properties of LyC emission from galaxies in the proto-cluster region and those from galaxies in general fields could be different. Here we report the detections of LyC from LAEs in a general field at $z \sim 3.2$ which is achieved by very deep narrow-band imaging using VLT / FORS1. Among 18 LAEs with spectroscopic identifications, at least three LAEs are detected at $> 3\sigma$ level. The brightest object ($R \simeq 23.0$AB) shows a significant offset between LyC and UV. One of the two remaining fainter LAEs show very strong LyC ($f_{\rm LyC}/f_{\rm UV} \approx 0.9$). These findings suggest that the LyC properties found in SSA22 are also seen in general fields.