Subaru meets JWST: The Direct Measurement of Lyα escape fraction at z~6.2

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We present a direct measurement of the Lyα escape fraction for Hα emitters (HAEs) at z~6.2 in the CEERS field by combining JWST/NIRCam F470N imaging with Subaru/HSC NB872 imaging. This unique pair of narrow-band filters enables simultaneous measurements of Lyα and Hα emission from galaxies during the epoch of reionization. We select 80 HAE candidates from F470N excesses, among which 53 have reliable NB872 photometry and 19 are detected in Lyα at >2σ significance. Stacking the HAE sample yields a median Lyα escape fraction at z=6.2 of 0.101(+0.090/-0.042), which is in good agreement with recent measurements at similar redshifts. We further find no significant dependence of the median Lyα escape fraction on the lower limit of Hα luminosity over the luminosity range probed by our sample. If the Lyα escape fraction traces the Lyman-continuum escape fraction, this implies that relatively luminous HAEs, rather than only the faintest galaxies, can provide an important contribution to the escaping ionizing photon budget. Furthermore, we find that the Lyα emitter fraction among HAEs remains high in overdense regions relative to underdense regions, supporting a scenario in which locally ionized bubbles enhance the transmission and visibility of Lyα emission. For individual galaxies, the Lyα escape fraction positively correlates with Lyα equivalent width and negatively correlates with the UV continuum slope β and the rest-frame UV effective radius, while no significant correlation is found with SED-derived E(B-V), or rest-frame optical size, although these trends are based on a limited sample. These results suggest that the galaxy-to-galaxy variation in the Lyα escape fraction is more closely linked to compact, low-attenuation star-forming components traced by the UV continuum than to global dust attenuation or the overall stellar structure.