Title

A Detection of [C II] Line Emission in the z = 4.7 QSO BR 1202–0725

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Abstract

We present ~3" resolution imaging of the z = 4.7 QSO BR 1202-0725 at 900 μm from the Submillimeter Array. The two submillimeter continuum components are clearly resolved from each other, and the positions are consistent with previous lower frequency images. In addition, we detect [C II] line emission from the northern component at $L = 4.5 \times 10^9\ L$. The ratio of [C II] to far-infrared luminosity is 0.04% for the northern component, and an upper limit of <0.03% is obtained for the southern component. These ratios are similar to the low values found in local ultraluminous galaxies, indicating that the excitation conditions are different from those found in local field galaxies. X-ray emission is detected by *Chandra* from the southern component at $L_{0.5\text{-}2\ \mathrm{keV}} = 3 \times 10^{45}$ ergs s^{-1} and, at 99.6% confidence, from the northern component at $L_{0.5\text{-}2\ \mathrm{keV}} \sim 3 \times 10^{44}$ ergs s^{-1}, supporting the idea that BR 1202-0725 is *a pair* of interacting galaxies at z = 4.7 and that each harbors an active nucleus.

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Comments

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