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Auto-Guiding System for CQUEAN (Camera for QUasars in EArly uNiverse)

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To perform imaging observation of optically red objects such as high redshift quasars and brown dwarfs, the Center for the Exploration of the Origin of the Universe (CEOU) recently developed an optical CCD camera, Camera for QUasars in EArly uNiverse(CQUEAN), which is sensitive at 0.7-1.1 um. To enable observations with long exposures, we developed an auto-guiding system for CQUEAN. This system consists of an off-axis mirror, a baffle, a CCD camera, a motor and a differential decelerator. To increase the number of available guiding stars, we designed a rotating mechanism for the off-axis guiding camera. The guiding field can be scanned along the 10 acrmin ring offset from the optical axis of the telescope. Combined with the auto-guiding software of the McDonald Observatory, we confirmed that a stable image can be obtained with an exposure time as long as 1200 seconds.

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