P26a Adaptive Optics Spectroscopy with High Angular Resolutions toward Outflows Emanating from Young Stellar Objects

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We present results of the [Fe II] λ1.644 μm spectroscopic observations toward the outflows emanating from DG Tau, HL Tau, and RW Aur with the Adaptive Optics System of Subaru Telescope. We resolved the region within $\sim\pm$140 AU ($< \pm 1''$) in the vicinity of their driving sources with an angular resolution of up to $0''.16$. We detected two distinct velocity components separated in space and velocity from all the objects. The high velocity component (HVC) shows the radial velocities $|V| >$250 km s^{-1} and is extended, while the low velocity component (LVC) has the peak velocities of $80< |V| <$150 km s^{-1} and is located near the driving sources. These velocities are consistent with the interpretation that the HVC is launched from the star surface or its vicinity while the LVC is accelerated near the inner edges of accreting disks. We also detected redshifted counterfeatures from DG Tau and HL Tau with a gap of $\sim 0''.7$ ($\sim$100 AU) occulted by their circumstellar disks. We demonstrate that the [Fe II] spectrocopy at high spatial and velocity resolutions is a powerful tool to study the outflow mechanisms from YSOs with large extinctions.