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The astronomical seeing from Dome A, Antarctica in 2023

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The astronomical seeing is caused by atmospheric turbulence, which is concentrated on the boundary layer. The boundary layer could hardly be avoided even at the best mid-latitude sites, because it is as thick as hundreds of meters from the ground. However, the boundary layer at Dome A, Antarctica could be as thin as ten meters, therefore excellent seeing around 0.3 arcsec is possible to be achieved at Dome A. This was confirmed by the measurements of KunLun Differential Image Motion Monitor (KL-DIMM) in 2019. KL-DIMM was maintained this January, then it was restarted and has been functioning well since then. Here, we will report the seeing results from Dome A in 2023, during both daytime and nighttime. For example, seeing better than 0.15 arcsec lasted for two hours on May 9, with the best seeing of 0.09 arcsec. And we will compare the statistics between the seeing in 2019 and that in 2023, to investigate annual variation. Besides, we will correlate the seeing values with the simultaneous meteorological data from KLAWS. We found a strong correlation between seeing and temperature gradient based on the daytime data in 2019. We will verify if they are correlated during nighttime, consequently, study the formation and evolution of turbulence.

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