

Stray light issues in HSC images on the night of July 29, 2024 HST

T.Terai (Subaru Telescope)

August 2, 2024

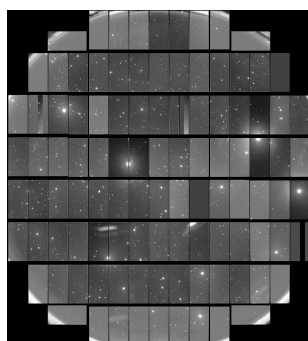
- Stray lights were found in HSC images taken in the $r2$ -band filter ($0.55\text{--}0.70\ \mu\text{m}$) in the several time zones (no moon on the sky) on the night of July 29, 2024 HST.

(1) 12 exposures during 22:18–23:06 HST

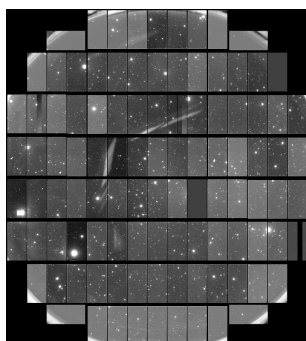
(2) 1 exposure at 23:42 HST

(3) 1 exposure at 0:13 HST

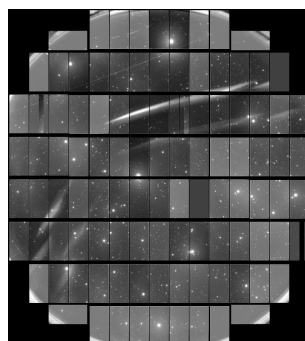
(4) 1 exposure at 0:53 HST



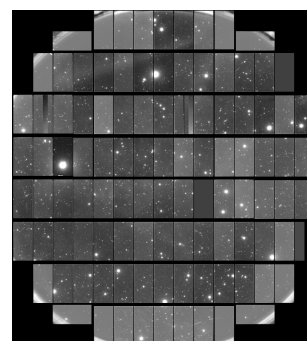
22:24 HST



23:42 HST

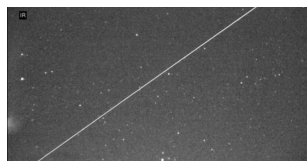


0:13 HST

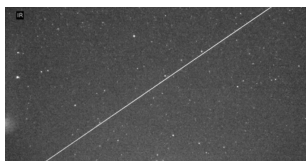


0:53 HST

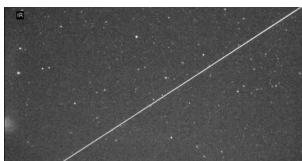
- In the first half night, Keck2 was emitting a laser into the southern sky. The laser beam were located in vicinity to HSC's field-of-view from 22:02 to 23:03 which covers the first time zone. Also, around from 22:20, the laser launch telescope was facing the Subaru Telescope and was seen bright from the Catwalk camera, which coincides with the timing of when the stray lights began to appear on the images. Either of them is likely to be the source of the stray lights in these time zones.



22:10 HST



22:30 HST



23:00 HST



23:10 HST

- At the second and third time zones, Keck2 was not emitting a laser but its dome appeared bright because it was illuminated by strong light, probably from vehicle lamps. This event was considered to cause the stray lights in the HSC images.



23:45 HST



0:13 HST

- The fourth stray light issue is fainter than the others. At that time, the Keck telescopes were not emitting a laser nor illuminated. We found that a bright meteor appeared on the video taken with one of the Catwalk cameras facing the same direction as the telescope pointing, which is a suspected source of this issue.



00:53:19 HST



00:53:20 HST



00:53:21 HST