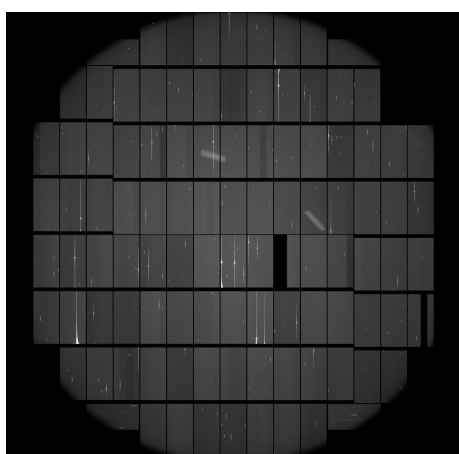


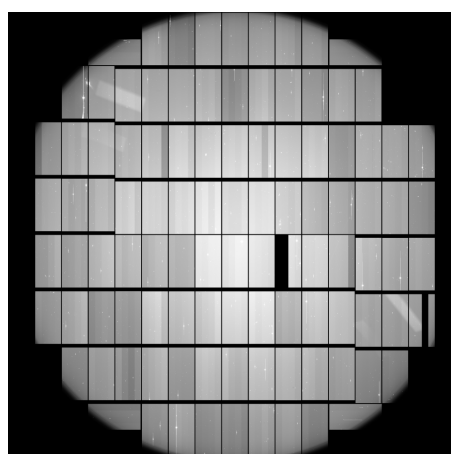
# Investigation of stray light on HSC images

November 15, 2019

- A large, arc-shaped ghost had appeared on some HSC images since the late February 2019.
  - The ghost is seen in 900 or more frames obtained from Feb 27 to Nov 5 with the *i2*, *z*, *Y*, and *NB921* filters. It appears most significantly in the *z*-band images.
  - The ghost tends to appear at relatively low elevations around  $40^\circ$ – $50^\circ$ . The pattern varies with elevation (EL) and rotates with the instrument rotator angle (InR).

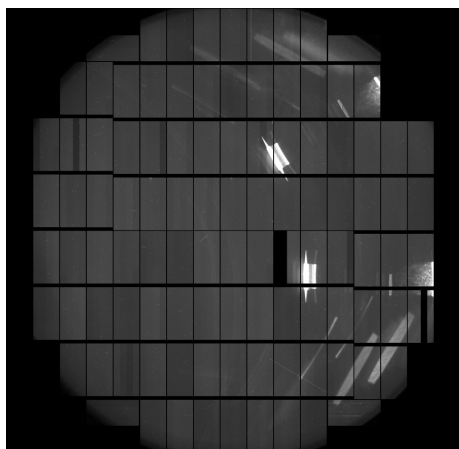


*z*-band, EL= $42^\circ$ , InR= $58^\circ$

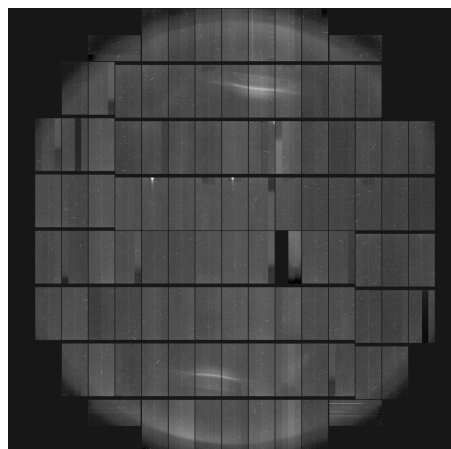


*z*-band, EL= $49^\circ$ , InR= $53^\circ$

- On investigation, the stray light source was identified as a dome inside monitoring camera at the rear side installed in late February 2019. This camera was confirmed to emit infrared light from the circumference of its lens.
- The camera was powered down on the morning of Nov 6. The ghost has disappeared since then (the remnant pattern is due to a light leak from the encoder of instrument rotator that is a known problem) .



*z*-band, EL= $42^\circ$ , InR= $15^\circ$ , dome closed



Same imaging after the rear camera was covered