

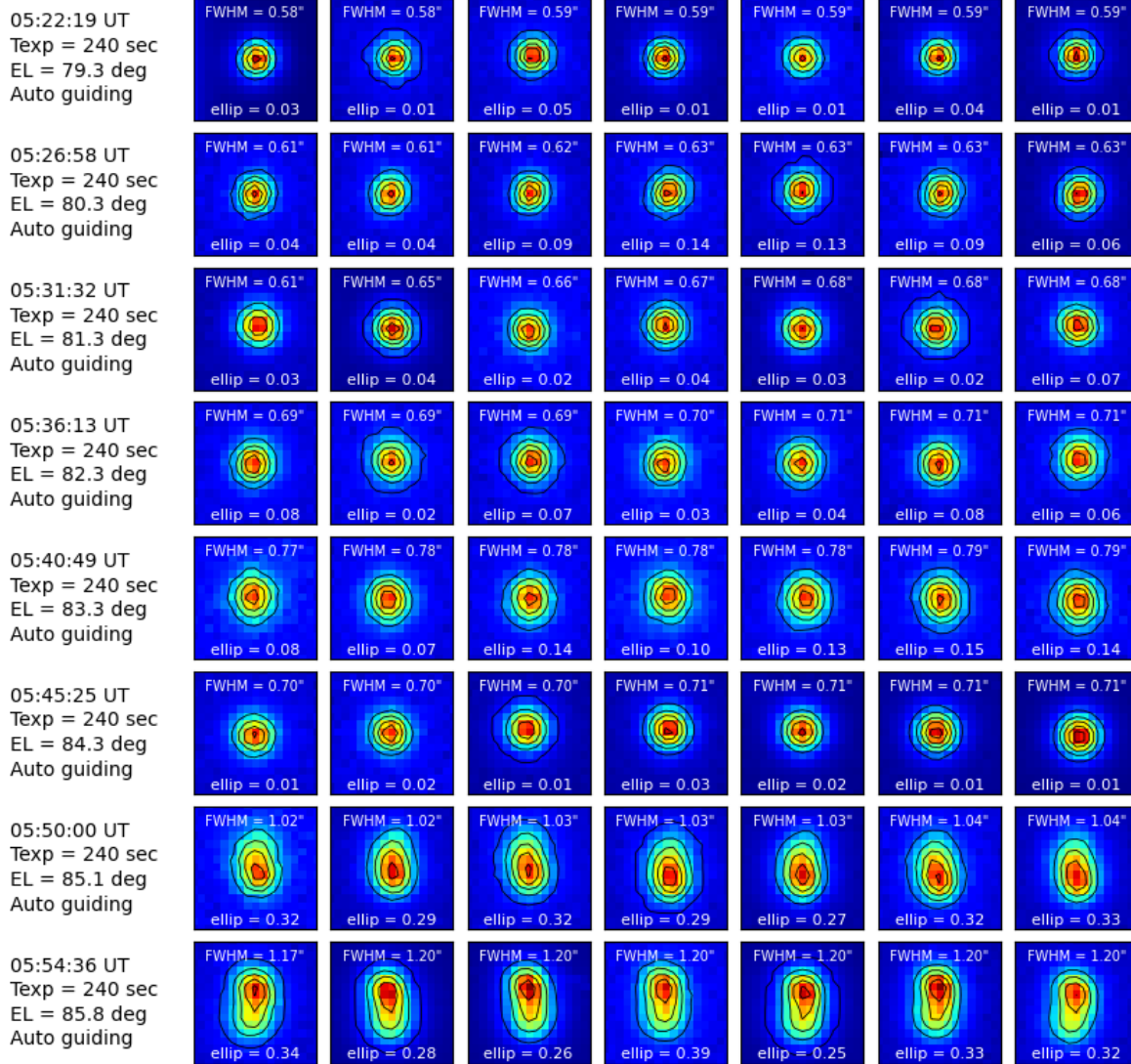
# HSC image quality at high elevation

T.Terai (Subaru Telescope)

January 2023

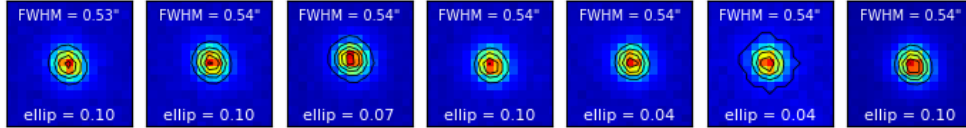
- Image quality of the HSC data taken at high elevation ( $> 75^\circ$ ) were inspected using the archival data.
- The following figures show stellar images in the data of CCD #049 (0.12) at the center of the field-of-view that were obtained with consecutive exposures to minimize other effects.
- Stellar images may deteriorate if the data are taken at elevation of  $\sim 80^\circ$  or higher. There is a high risk of star elongation/distortion above  $\sim 84^\circ$  in elevation even with auto guiding.

## Consecutive exposures on a night in November 2014

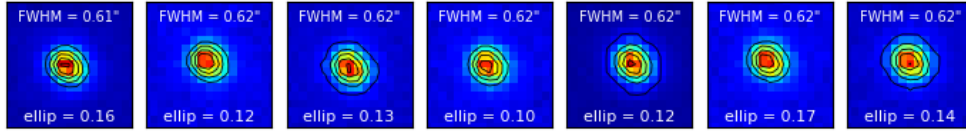


## Consecutive exposures on a night in March 2015

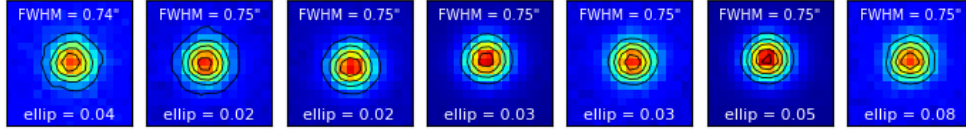
07:18:49 UT  
Texp = 150 sec  
EL = 81.6 deg  
Open tracking



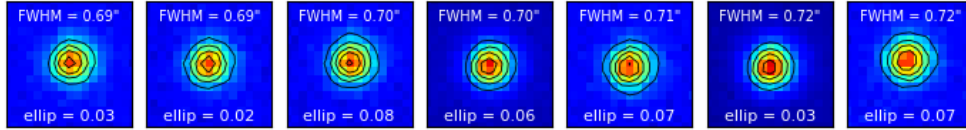
07:21:55 UT  
Texp = 150 sec  
EL = 81.0 deg  
Auto guiding



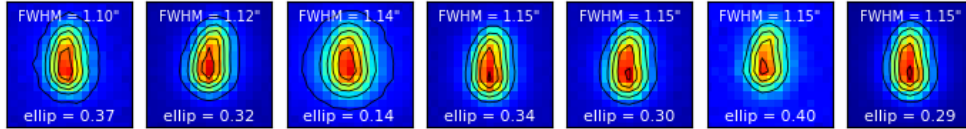
07:29:50 UT  
Texp = 150 sec  
EL = 82.1 deg  
Auto guiding



07:33:00 UT  
Texp = 150 sec  
EL = 84.3 deg  
Auto guiding

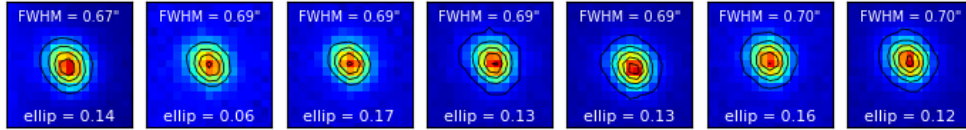


07:36:12 UT  
Texp = 150 sec  
EL = 86.4 deg  
Auto guiding

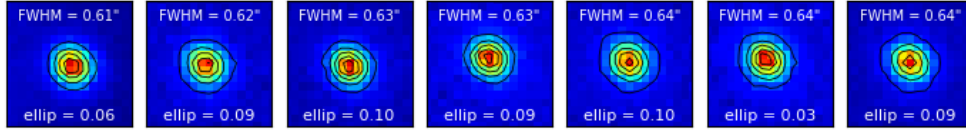


## Consecutive exposures on a night in October 2015

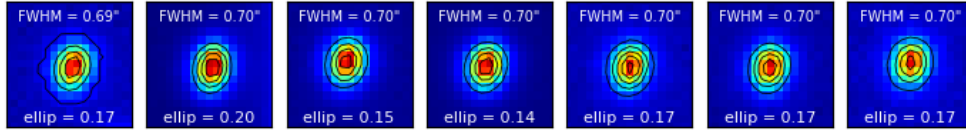
10:26:23 UT  
Texp = 250 sec  
EL = 83.6 deg  
Auto guiding



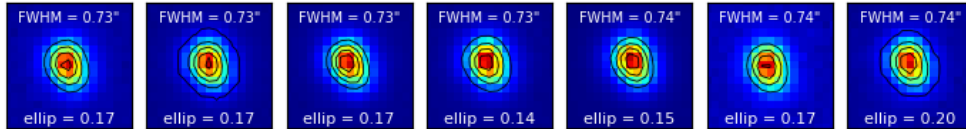
10:31:21 UT  
Texp = 250 sec  
EL = 83.2 deg  
Auto guiding



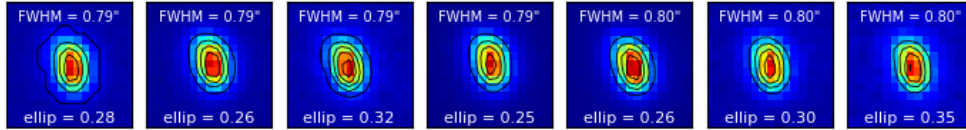
10:36:44 UT  
Texp = 250 sec  
EL = 83.3 deg  
Auto guiding



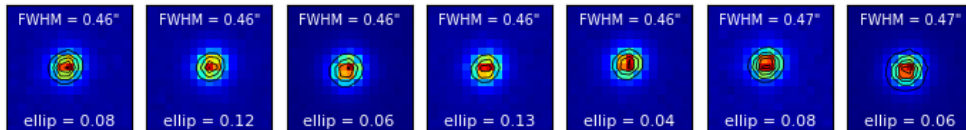
10:41:44 UT  
Texp = 250 sec  
EL = 83.0 deg  
Auto guiding



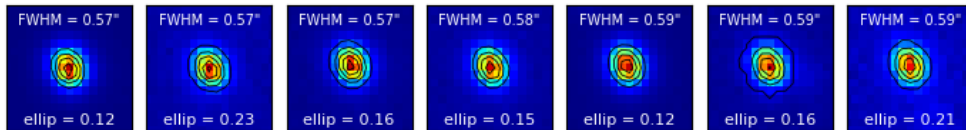
10:47:11 UT  
Texp = 250 sec  
EL = 83.6 deg  
Auto guiding



10:52:34 UT  
Texp = 250 sec  
EL = 83.9 deg  
Auto guiding



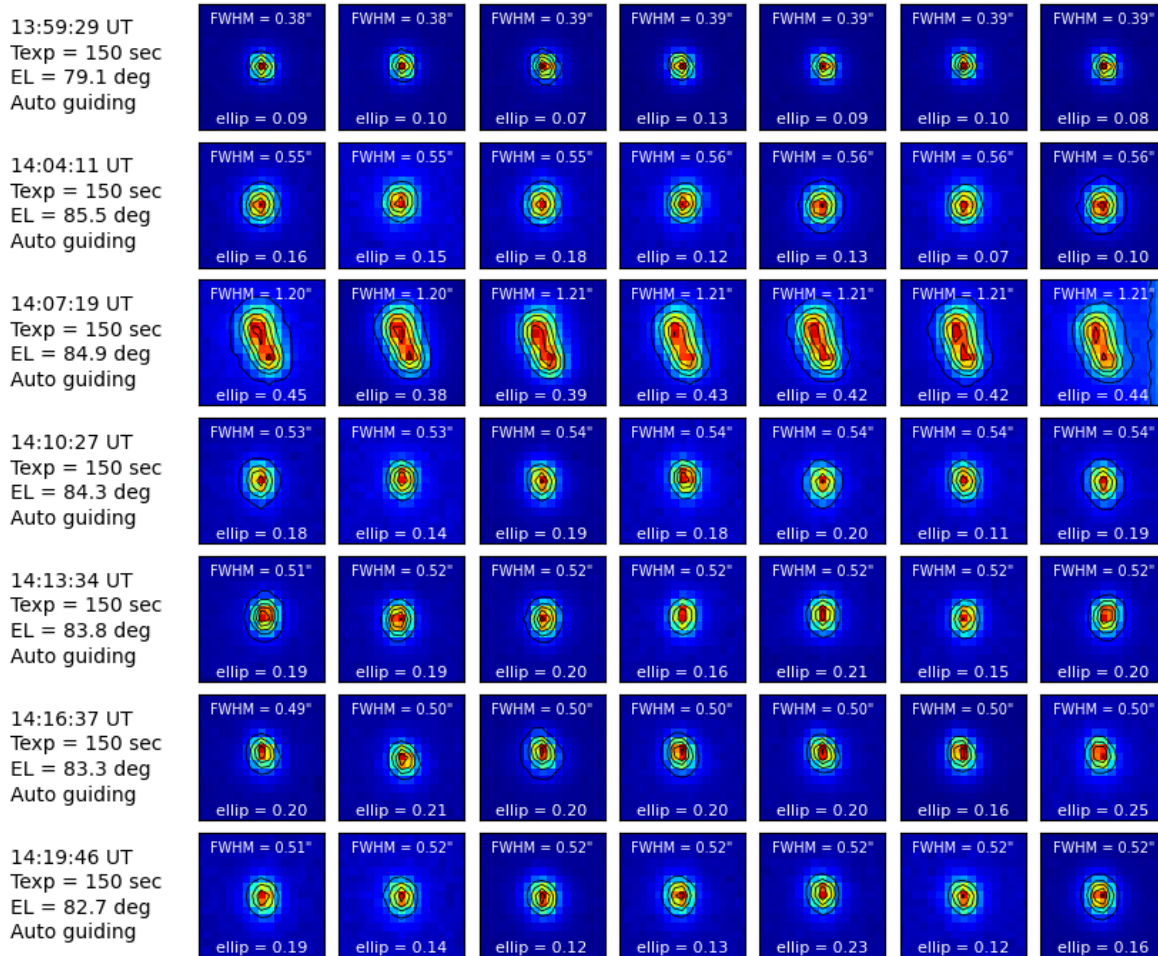
10:57:53 UT  
Texp = 250 sec  
EL = 84.2 deg  
Auto guiding



## Consecutive exposures on a night in June 2016

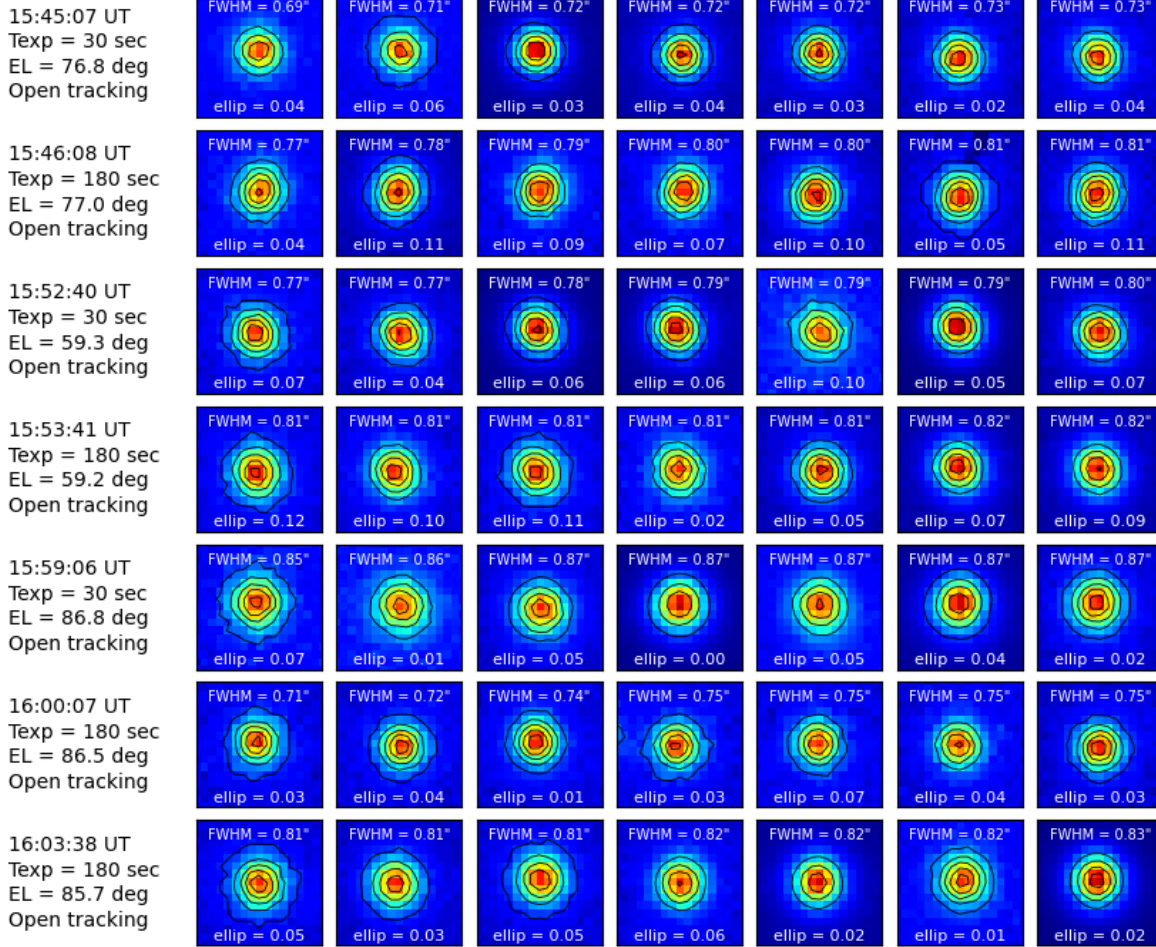


## Consecutive exposures on a night in October 2016

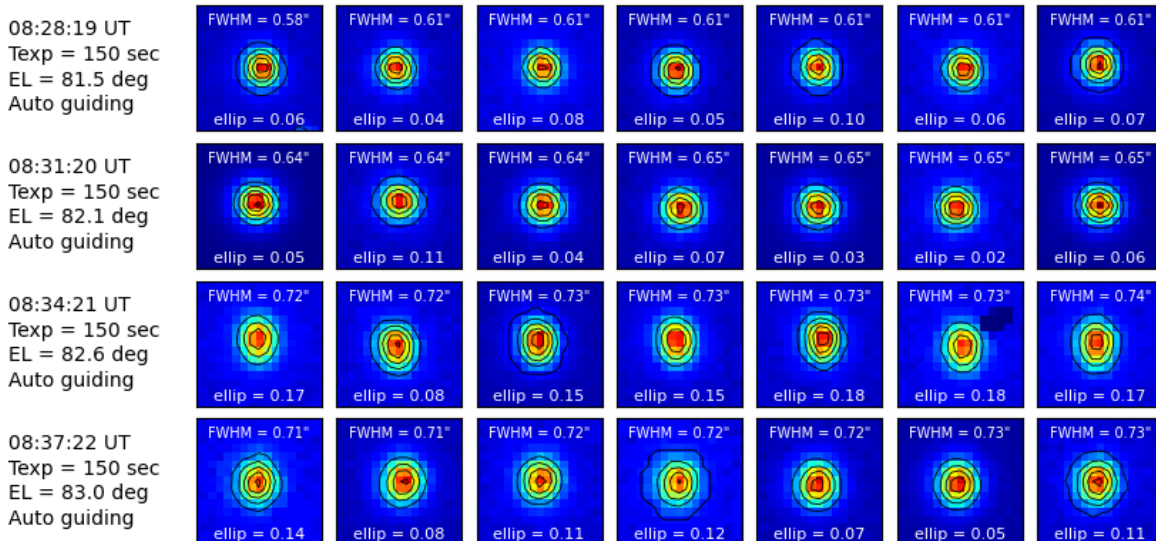




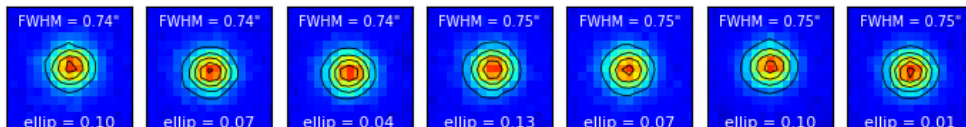
## Consecutive exposures on a night in January 2018



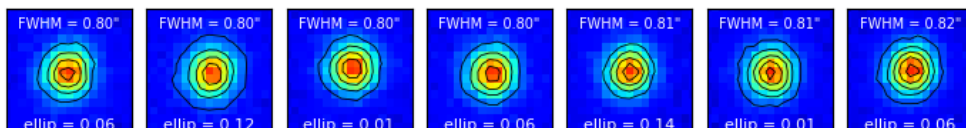
## Consecutive exposures on a night in April 2018



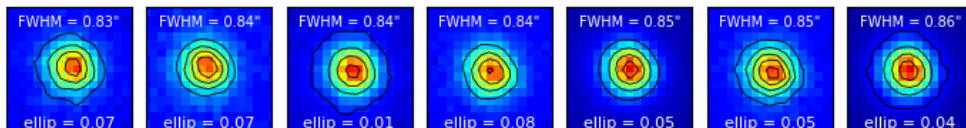
08:40:23 UT  
Texp = 150 sec  
EL = 83.4 deg  
Auto guiding



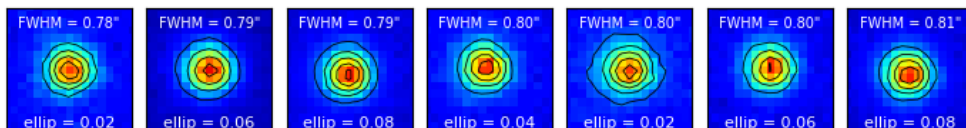
08:43:24 UT  
Texp = 150 sec  
EL = 83.8 deg  
Auto guiding



08:46:24 UT  
Texp = 150 sec  
EL = 84.1 deg  
Auto guiding

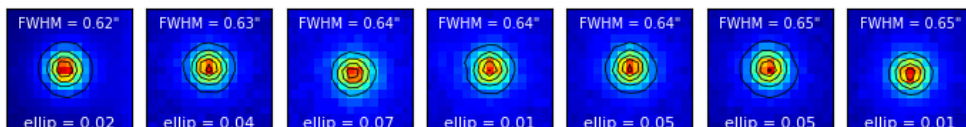


08:49:25 UT  
Texp = 150 sec  
EL = 84.3 deg  
Auto guiding

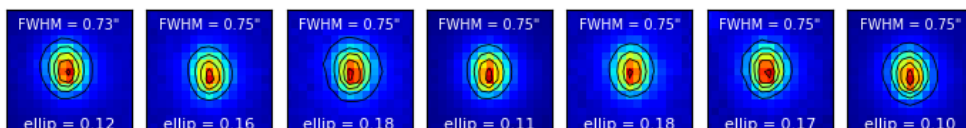


## Consecutive exposures on a night in June 2022

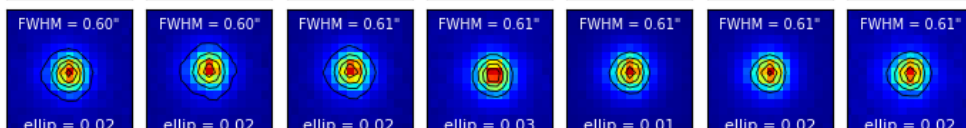
08:20:43 UT  
Texp = 300 sec  
EL = 77.6 deg  
Auto guiding



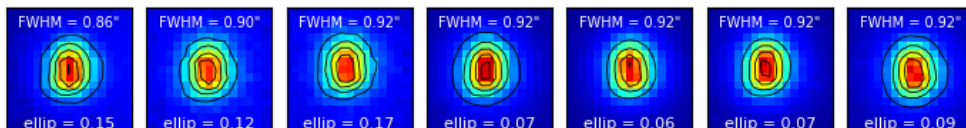
08:26:53 UT  
Texp = 300 sec  
EL = 79.0 deg  
Auto guiding



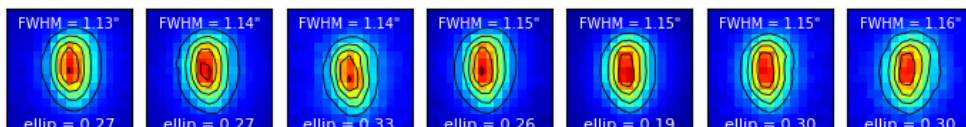
08:32:24 UT  
Texp = 300 sec  
EL = 80.2 deg  
Auto guiding



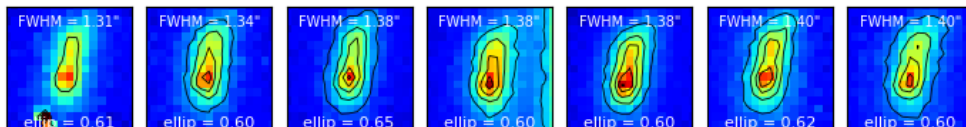
08:37:55 UT  
Texp = 300 sec  
EL = 81.4 deg  
Auto guiding



08:48:07 UT  
Texp = 300 sec  
EL = 83.7 deg  
Auto guiding



08:53:38 UT  
Texp = 300 sec  
EL = 84.8 deg  
Auto guiding



08:59:10 UT  
Texp = 300 sec  
EL = 85.8 deg  
Auto guiding

