Optics maintenance

Koji Noda (ICRR, U. Tokyo) for the team

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LST meeting @ Rijeka

Mirrors

- Who: ICRR in general is difficult to provide enough manpower for the maintenance works in the dish.
  - Great if we can arrange a combined preventive maintenance in the dish structure. Corrective needs a collaboration, by ICRR (gnd) + MPI (dish)
- If a mirror(s) has a severe problem (e.g. "a pad detached") and we cannot move the telescope, we should exchange it quickly, which will take 1-2 days, as mirrors are stored in Mirca.
  - Last time we used a mirror already in ORM, but still we should have to bring the fixed point thread rod, and some tools from Mirca. It would be useful to have a set of "kit for mirror replacement".
- If we can leave it for a while, no downtime is needed and the corrective maintenance can be done in daytime or moon break.
- Mirror exchange needs >4 people (2 in dish, 2 in basket, 1-2 on gnd from LST), for 2 hr for preparation + no. of mirrors x 0.5 hr
  - The last exchange of 1 mirror finished before noon.

Actuators, CMOS, cables

- Who: ICRR in general is difficult to provide enough manpower for the maintenance works in the dish
  - A combined regular (preventive) maintenance to check things 2 days x 2 person in total (movements in the dish take time and effort)
  - Corrective maintenance needs a team of ICRR (gnd) + MPI (dish)
- If a group of the actuators have a severe problem, we should operate with a degraded PSF performance, but in principle no downtime required by these devices. Spares of the actuators, CMOS, cables are in Mirca (though few are in ORM)
- Exchange of the actuator, CMOS, cable needs 1-2 people, 1 hr per item (conservative estimate)

16 AMC boxes

- Who: ICRR in general is difficult to provide enough manpower for the maintenance works in the dish
  - A dedicated preventive maintenance to check things 4 hrs x 1 person in total (movements in the dish take time and effort)
  - Corrective maintenance needs a team of ICRR (gnd) + MPI (dish)
- If a box (in particular, PC) has a problem, we should operate with a degraded PSF performance, but no downtime is required by a failure of one box. Spares of the box is available in ORM, and devices inside it can be taken from it and exchanged (PC, PSs, switches, antenna, Xbee USB module, temp/humid sensor, and short cables).
- Exchange of the device needs 1 people, 1 hr per item
  - In fact most of time needed is to find what is wrong. It happened for us to understand a short cable connecting the two switches is in failure...

PSF camera

- Who: ICRR in general is difficult to provide enough manpower for the maintenance works in the dish
  - Preventive: A combined preventive maintenance to check the dish center. Maybe the input window should be cleaned from time to time. 1 hr x 1-2 person in total.
  - Corrective maintenance like an exchange can happen but should be rare (though it happened once already)
- If it has a problem, we should operate with an unknown PSF performance, but no downtime is required by a failure.
- No spare is bought but up to LST3 we have to-be-installed cameras. Cameras are in Mirca (or in Japan).
  - Better to buy a spare (after the current one is checked OK)
- Exchange of the camera needs 1 people, 2 hr (more?)