

# 38<sup>th</sup> Symposium on Engineering in Astronomy

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Lucio Ramos  
Instrumentation Electronics Technician  
Subaru Telescope, NAOJ

*Abstract:*

*Subaru Telescope is now its 20th year of operation, with increasing electrical maintenance and new installation challenges. Existing devices in use now have few spares and most are no longer manufactured. In order to continue operations with minimal down time, efforts have been made to allow repair and or replacement of key electrical components. In this presentation some of these works will be covered which keeps Subaru Telescope in continued operations.*

This year I was asked to attend the 38<sup>th</sup> Symposium on Engineering in Astronomy located at the Mitaka Campus of NAOJ. My presentation focused mainly on electrical maintenance, new instrument installations and the status of Uninterruptible Power Supplies (UPS).

For my presentation, I detailed the current status of existing electrical installations at Subaru Telescope. Much of the original wiring components initially installed are still in use today. Due to the fact that the telescope has been in operation for two decades, it is even more important that closer maintenance inspections and corrective measures be performed.

Once worn or faulty components are discovered within a planned maintenance schedule, they should be repaired or replaced, preferably on a planned schedule, versus having to repair or replace on a forced schedule.

Spare parts for discontinued electrical components are difficult to source, therefore alternate components need to be researched and acquired in order to be ready to support continued operations in the event of component failures.

Electrical panels are mostly filled to capacity. In order to accommodate the installation of new instruments, additional panels were installed to allow more circuits to be added.



One advantage to adding new panels is now readily available circuit breakers can be purchased to replace the older circuit breakers in case they become faulty. By preparing new panels and wiring beforehand, electrical power down time is minimized.



In the second part of my presentation I shared some of the UPS issues we encountered in 2018. After a summit-wide power outage, one of our main facility UPS failed to recover itself. Shortly thereafter, the second UPS failed and left Subaru Telescope with limited operability. New batteries were ordered and installed to UPS1 and a second set of batteries ordered for UPS2. These UPS incidents further emphasized the need for improved maintenance practices.



After the presentations of the symposium, we were divided up into different discussion groups and presented with a task to discuss how we can continue to keep the telescope in continued operation in the future.

From my group discussions we agreed on these three areas to focus on:

1. Cross-train staff with other groups/divisions, and also with new workers.  
Regular cross-training sessions with different groups and divisions prepares the staff member to fill in whenever there is a shortage of trained personnel. This helps to build teamwork and develop each staff member to become more productive.
2. Each staff to communicate what is going on to inform all the necessary people involved. Record and document the situation to have a reference in the future if the situation occurs again.
3. Priorities of Tasks. Management and supervisors to review staff work priorities, ensuring that they are in line with the overall operational goals of the organization.

Attending the 38<sup>th</sup> Symposium on Engineering in Astronomy in Mitaka, Japan was a both a great cultural and professional experience for me. Although most of the presentations were in Japanese, the graphs, charts and pictures helped to understand the presentations. Summary interpretations by my co-workers also helped a lot. I was fortunate enough to be able to tour the facilities of NAOJ Advanced Technology Center (ATC) and get to see the machine shop, laboratories and some of the ongoing projects.

Before departing Japan, fellow Subaru co-worker Sato-san was kind enough to escort Robin Spencer and myself into Tokyo area to see Akihabara, Tsukiji Market area, Asakusa and the Tokyo Skytree. It was a lot for just one day and not much time available, but I am glad I got to see all that I did. The transit system with buses, trains and subways was an experience in itself.

Thank you for the opportunity to do a presentation in Japan, share work experiences with other members and organizations of NAOJ, and the chance to experience some the culture of Japan. I hope to do it again someday and would definitely recommend it to anyone else who is given the opportunity.