Vadim Murakhovskiy
Week 6 July/8-12/2024

Day 1: July/15/2024

—Day off—

Day 2: July/16/2024

After the findings on friday, I dedicated my time in testing this time factor more closely. This process involved tests with keeping the laser turned on while either periodically turning on the PMT or to constantly have it on and recording the results every 2-5 minutes. The goal of the procedure is to determine if there is a way to keep this factor from affecting the data 10 minutes after getting it set up. Suzuki-san and I predicted that there should be a plateau in the rising pulse height. At the end of my tests, there does seem to be a relative plateau after it reaches around 80 mv, however with time, the peak seems to still gradually continue to increase just at a lesser rate. I also have plans to see if the position of the laser changes the increase in mv the same way since it's still shining at the PMT or if it's just the specific position for an extended time.

Day 3: July/17/2024

–Gion Matsuri Festival–

Day 4: July/18/2024

Today I discussed with Suzuki-san the steps forward after the time testing. It was agreed that I would focus on recreating tests to confirm their accuracy, with the added steps to try to reduce the heating of the laser. This would involve warming up the laser beforehand by keeping it on for about an hour before starting data collection. Another is to make sure I do the testing quickly and all at once to avoid fluctuating peaks. Currently I am working on recreating the basic x shift step function we had last week and will analyze these results on Friday.

Day 5: July/19/2024

As the day of the final presentation is approaching I have begun to create my presentation. I would work at this in tandem with my current testing. However something quite unfortunate occurred after realizing that none of the data have been showing consistent results. It turns out the PMT surface has uneven readings on differing locations of the surface. This could have dire repercussions with much of the collected data being tainted. I worked with Suzuki-san to analyze what part of my data I would need to throw out and which could possibly stay. A bright side to the discovery is that sense the pmt is close to the cone and laser, the area at which the laser can hit the surface is reduced meaning the fluctuation might ruin the data for the average height of the pulse but the pattern that the reflection off the cone causes should stay the same. The analysis of this issue is still ongoing so in the meantime I am working with a different pmt to gather some simple data on the reflections.