



# Week Summary Report

Supervisor: Luke Dyks

## Overall Summary

Week type: User Experiment – EOS Bunch Length Measurements

Date/WeekNumber: 17/05/2021 to 21/05/2021 (Week 7)

EDMS number: Not yet assigned

Beam time: 13.5 hours

Fatal Failure time: 7 hours

Installation time: 12 hours (+ 7 hours access on Monday)

Number access: 3

#	Experiment Name	Responsible	Institute	Installation time	Beam time
N/A	EOS Bunch Length Measurement	Stefano Mazzoni	CERN	15 hours	23.5 hours

## Weekly activity

The week was spent on the EOS bunch length measurements. The team were not ready until Tuesday and when their work began we encountered several issues. Firstly, there was an issue with low bunch charge. After significant work it was noticed that an iris was clipping the beam. There were also several issues on the EOS side, with a full laser realignment taking up half of Thursday and most of Friday.

## Day by day report

### Monday

The week began with an access. Several different tasks were performed during this access:

- In preparation for the WFM tests the water system was connected to the CLIC structure.
- Several power supplies were tested for the safety valves.
- BTV620 was moved from the AWAKE spectrometer by Eugenio.

### Tuesday

Tuesday was the first day the EOS crew were available for experiment. The start was delayed by 30 minutes due to klystron MKS15 refusing to start. Work began setting up the beam for the EOS requirements. The maximum charge was around 400 pC. The bunch length was measured to be 4.5 ps.

There appeared to be a stability issue that was due to a change from 10 Hz rep rate to 0.833 Hz.

**We must remember to inform the laser people of these changes.**



Following lunch there was a significant issue with bunch charge. The maximum bunch charge achievable was 80 pC. Around 4 hours was spent in the evening by Luke, Antonio, Wilfrid and Edu in order to investigate the issue.

### **Wednesday**

An access was scheduled at 8:30 to investigate the issue. Edu noticed that the laser beam was being clipped on an iris. There was also a control issue with the laser knobs, Wilfrid reported the issue.

The beam was restarted. To increase bunch charge the laser spot was moved. A bunch charge of 800 pC was created. The bunch was compressed from about 5 ps to 2.5 ps. The EOS equipment was inserted. The beam was focussed onto their system.

The beam could not be seen on their digital camera which turned out, after several hours, that it was a trigger delay issue due to a change made by the AWAKE spectrometer group.

### **Thursday**

The timing issue of the previous day was fixed. However, no signal could be seen on the EOS detector. At 2 pm there was an access to check the setup, which was misaligned. The access was extended until the Friday.

### **Friday**

The entire day was taken up with access.

### **Other business**

Wilfrid finished the manufacturing of the Rb experiment holder.

### **Additional resources**

## **Main issues**

Laser/bunch charge issue (solved by Antonio, Edu, Wilfrid and Luke)

## **Actions needed to be followed up**