

## Commissioning of 6.5MeV electron Beam of Microtron

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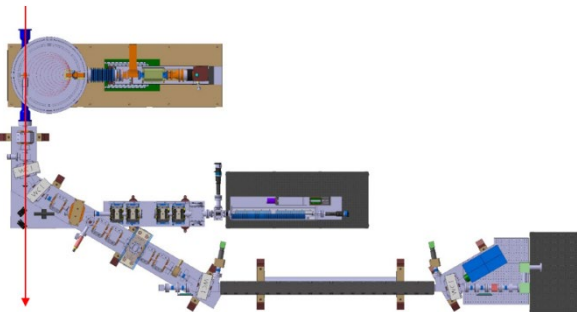
### 1. Introduction

A microtron generating a 6.5 MeV electron beam was installed and tested. In addition, aligning work was performed to maintain equilibrium during the acceleration and withdrawal of the electron beam. Since the quality of the beam varies depending on the current value of the cathode and the voltage of the modulator, a trial run was conducted to recover a good-quality beam by adjusting it.

### 2. Methods and Results

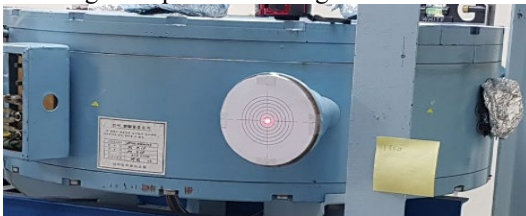
In this section describes some of the tasks performed for stable electron beams. Includes laser alignment, adjusting the magnetron current and emission current.

#### 2.1 Laser Alignment



The plane on which the electron beam is accelerated, and the ground were kept parallel to ensure that the beam had no longitudinal momentum.

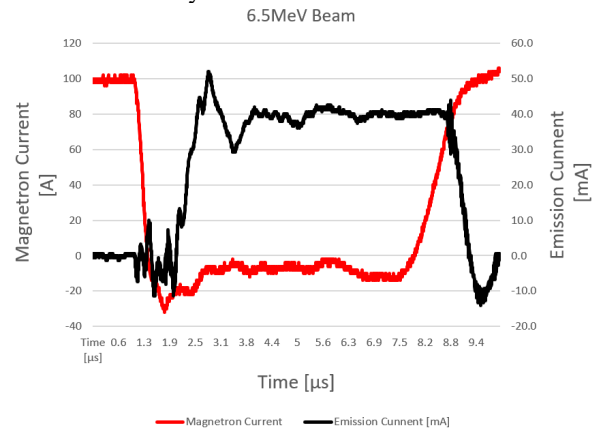
A He-Ne laser and two focusing lenses were used to align the center of the microtron and extractor using a collimating laser parallel to the ground.



#### 2.2 Adjusting the magnetron current and emission current

The positive current value is adjusted relative to the emission current value to extract a stable electron beam. It also adjusts the value of the modulator voltage based on the value of the magnetron current. To compensate

for the acceleration current value decreasing as the emission current value increases, the macro current value of magnetron is increased by increasing the voltage of the modulator. However, in this case, if the emission current and/or acceleration current is reduced at random, acceleration failure begins and the acceleration cavity is released.



### 3. Conclusions

A microtron accelerating an electron beam of 6.5 MeV was installed after the transfer, and an alignment method using a laser was used. In addition, a trial run was conducted to find a suitable value by adjusting the two values according to the correlation between the magnetron current and the emission current.

### REFERENCES

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