DISSERTATION

Cool Science

ausgeführt am Atominstitut

der Technische Universität Wien
Fakultät für Physik

unter der Anleitung von
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Matrikelnummer: 9-18-27-15-21-36

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Wien, am 05.05.2020

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1 Beam Characterization

Chapter about beam characterization.

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2020-09-27 set voltages
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2020-10-22 current measurement aluminum foil
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2020-11-14 assemble chamber with copper rings
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possible sections
current and voltage on filament
pressure (oxygen exposure) vs beam current
aluminum foil
What happens with the wobblestick ->
Faraday cup -> Frank
Beam current measurement -> Frank
Measurement Ablenkungsgeschwindigkeit (frequency) -> Alex

1.1 Aluminum foil

In fig. 1.1 the inside of the 6-way cross of the first iteration is shown. On one side of the phosphor screen, aluminum foil was attached to simulate the aquadag coating inside a CRT. The beam was deflected on the aluminum foil and the BNC output was connected to ground through an ammeter to measure the beam current. As shown in fig. 1.2 there is close to no difference in the filament voltage (and therefore heating power) between an opened and unopened CRT while the beam current on the aluminum foil varies widely. One possible reason could be that electrons scatter around and not all choose the wire path to ground. Therefore a Faraday cup (see) was used in the second iteration.

explain in basic what aquadag

ref Faraday cup tion

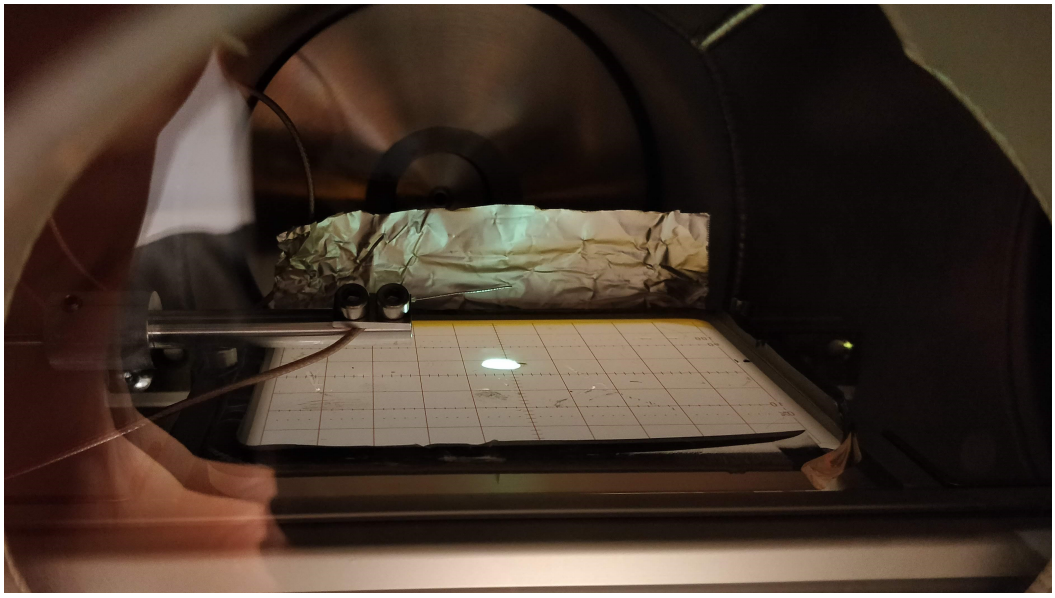

Figure 1.1: Front view of vacuum chamber (first iteration).

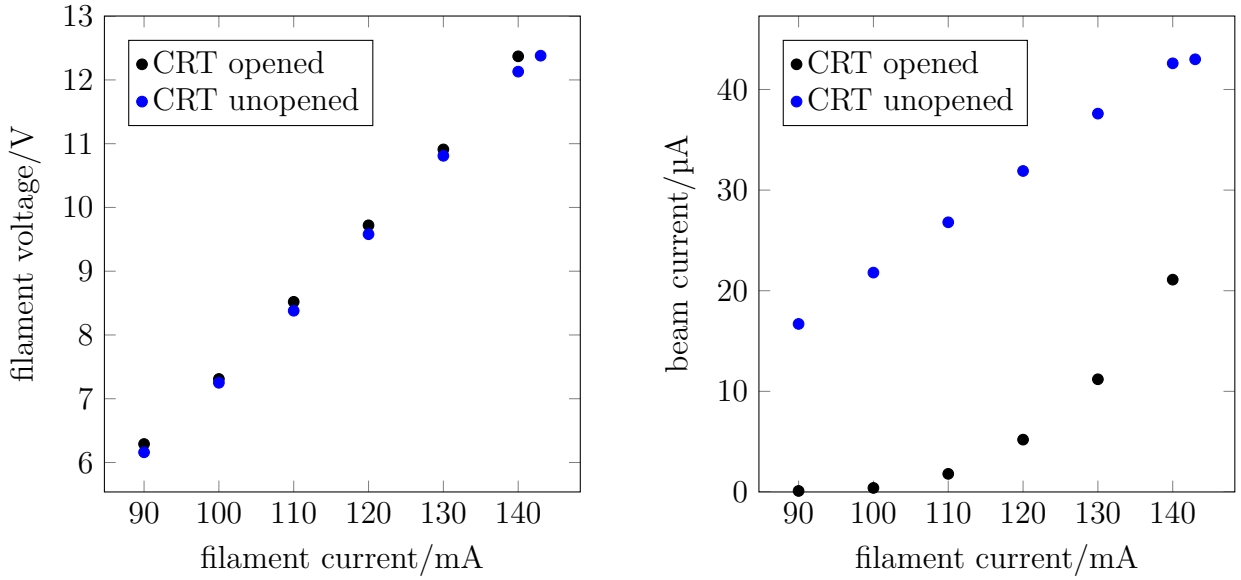

Figure 1.2: Difference in filament voltage and beam current between an opened and unopened CRT.

figure size, overfull hbox

Todo list

References

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