DISSERTATION

Cool Science

ausgeführt am Atominstitut

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Fakultät für Physik

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"The Setesh guard's nose drips."
Teal'c

Contents

1 Electron beam setup

chapter about electron beam setup

Charakterisierung der intakten CRT -> Frank Charakterisierung HVPS -> Frank

Skizze inkl. externe Power Supplies, wie wird die CRT betrieben?

Heater Wie sieht der Innen aus? CRT Mount ??

1.1 Charatarization of a working CRT

HAMEG HM507 oscilloscopes were used for testing purposes. These contain a D14-363GY/123[1] CRT hereinafter abbreviated as 'D14', 'tube', or 'CRT'. Although the HM507 has only a bandwidth of 0 MHz to 50 MHz, which is not sufficient for the hyperfine splitting frequency of 461.7 MHz of ^{39}K, it was used nevertheless because of its simple construction and availability. A schematic view of the device is shown in fig. 1.1 with the back pin arrangement in fig. 1.2.

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The voltages and currents of the necessary pins to drive the CRT were measured with a voltage probe with an attenuation ratio of and are summarized in table 1.1. It was not possible to measure pin g3 directly. Therefore a HVPS (section 1.2) was used to set a voltage and the beam diameter was observed. The best focus was achieved with a voltage of -1.813×10^3 V.

model number

1:100 or 100:1

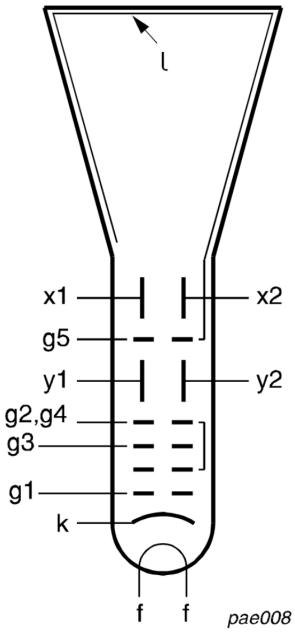

Figure 1.1: Electrode configuration (from [1])

how to cite figure

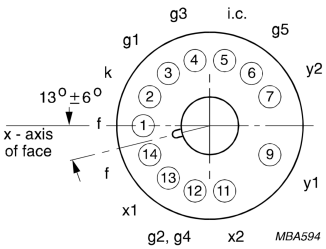

Figure 1.2: Pin arrangement, bottom view (from [1])

how to cite figure

Table 1.1: D14-363GY/123 CRT pin measurements

number	pin	voltage/V	current/µA
1	f	-1.99×10^3	86.6×10^3
2	k	-2.00	-7.6
3	g1	-2.03	0
4	g3	-	-1.813×10^3
5	i.c.	71.7	0.1
6	g5	64.0	7.2
12	g2, g4	71.0	0
14	f	-1.97×10^3	-86.2×10^3

1.2 High Voltage Power Supply HVPS

Todo list

References

[1] Frank Philipse. *D14363GY123*. URL: https://frank.pocnet.net/sheets/186/d/D14363GY123.pdf (visited on 03/10/2020).