

R04.2

Maltese Cross Demonstration experiment



In this experiment the objective is to perform a qualitative analysis on cathode rays, gaining insight into the particle nature of electrons, and also an introduction to electromagnetism.

Introduces:
 Particulate nature of electrons
 Deflection by a magnetic field
 Linear propagation of cathode rays

Item	Quantity	Code	Total Price
Maltese cross tube	1	P67-0500	£157.16
E.H.T power supply	1	P58-6500	£280.00
Bar Magnet	2	P61-0100	£4.74
Power cables	2	P56-3880	£4.72
Total:			£446.62

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What to do:

1. Connect the power supply to the cathode ray tube and switch on, slowly increasing the voltage until the shadow of the Maltese cross is completely visible.
2. Connect the Maltese cross to the anode potential.
3. Compare the light shadow to the shadow caused by the electrons. From this it is possible to determine that the cathode rays propagate in a straight line.
4. Disconnect the cross (the shadow should become bigger) and wave a bar magnet around the cross. It should waver and distort, showing how electrons are deflected in a magnetic field.