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Notes Physics X101 ABC (Navy Research Group)
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Dates 1948
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Tobias File X101 ABC

June 18, 1948

Leo Lipetz
Will Siri

Below is listed the tentative plan for the various experiments to be done in Physics X101 ABC. There will be two 3-hour and one 4-hour laboratories a week, or 18 lab periods.

(1) Plateau of Geiger counter. Inspection of pulse shape with oscillograph. Checking of the statistics of the counter by means of repeated counting of the same sample.

(2) Measurement of co-incidence correction and resolving time in beta counter.

(3) Half life determination of radioactive isotopes:

(a) Copper - 5 minutes' half life.

(b) Iodine - 8 days' half life.

(c) P^{32} - 14 days half life.

The students will have to take one measurement each time they come.

(4) Check of the inverse square law for distance for ionization by gamma ray emitters, using Lauritson's electroscope.

(5) Beta ray absorption curve of P^{32} and Iodine 131, both by counter and electroscope. (6) Gamma ray absorption curve of Iodine 131 and Cobalt 60 gamma rays using good geometry and gamma ray counter.

(7) Self absorption curve measured in P^{32} by the dilution method and back scattering curve of P^{32} in aluminum.

(8) Preparation of Uranium standard. Prepare uranyl nitrate by dissolving uranium oxide in nitric acid. Measure the alpha activity of a known volume of uranyl nitrate by means of an alpha counter. Prepare beta standard from uranium oxide and verify the geometrical calculations for beta counter efficiency.

(9) Monitor a prepared part of the laboratory for alpha and beta activity. Determine the safe areas for laboratory workers.

(10) Prepare auto radiogram of tomato plant leaf using P^{32} and tomato using Zinc.

(11) ~~Prepare electroplated samples of iron which represent blood sample of a rat after injection of radioactive iron.~~

$BaSO_3$ deposition Youlwich. (August 9, 10)

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Leo Lipetz
Will Siri

June 18, 1948

(11) Make a gamma ray standard by measuring the co-incidence counts of Cobalt.

Weymouth (12) Determine the distribution of radioactive Phosphorus in the laboratory mouse. (tentative) two 8 mice live bone skin spleen, muscle 2 weeks.

(13) Measure the neutron flux induced at the cyclotron by the neutron counter and by indium activation method. Cd with & without

Dunn ~~(14) Prepare a purified sample of radioactive sodium by remote control methods.~~ Zinc.

(15) Use the Lindemann electrometer to measure the intensity of radioactive carbon sample. ~~Also deposit some radioactive barium carbonate on sample holders.~~

(16) Determine the distribution of ionization in a phantom of the human body under a Crocker x-ray tube. pomelin.

The above titles are somewhat tentative. I should like to have each of you select about half of the above work and go through each experiment to the extent that the program can be typed up and preliminary protocol made available. Also in order to take care of all the required materials, it is advisable to do the experiments and make a list of everything needed.

Sincerely,

Cornelius A. Tobias

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