Particle Detector and Analyzer

WEEK 1

Aim:

(i) To understand the working of charged particle detectors.

(ii) To design and finalize a charged particle detector's blueprint/schematic and procure the required components.

WEEK 2 & 3

Aim:

(i) Initialization of the building process.

(ii) Complete the final apparatus for detecting charged particles. Namely, electrons, protons, muons. We will also try to detect other charged particles but we can't be certain about that at this moment.

(iii) To understand the working of uncharged particle detectors.

WEEK 4, 5 &6

Aim:

(i) Modify the built set up or separately incorporate one for uncharged particles like neutrons, photons.

(ii) Plan to build a particle accelerator and use this particle detector along with that.

Materials required:

(i) Liquid Nitrogen.

(ii) Magnets/Helmholtz coils.

(iii) Glass chamber.

(iv) Isopropyl alcohol.

(v) Electron gun.(Rs.6000)

(vi) Fission sources.

(vii) High voltage source.

(viii) Vacuum pump.(Rs12000)

Price estimate: Rs.20000

What we hope to learn from this?

- To get some insight in the working of the LHC(CERN) and other colliders.
- Interaction of particles with fields.
- Various nuclear fission processes and their products.
- Find out the properties of the various particles to be detected.

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