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. 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 for detecting the same from nuclear decays.

Materials required:

(i) Liquid Nitrogen.
(ii) Glass chamber.
(iii) Isopropyl alcohol.

Price estimate: Rs.5000

Rough outline of functioning

The signature would be visible due to cosmic rays entering the chamber which leave a trail in the supercool alcohol vapours

We intend to use magnetic fields across the cloud chamber and detect positive and negative charged particles via their direction of deflection.

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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Comments from Mentors:
I would suggest you concentrate either on electron/proton detection or their acceleration. Achieving both is a too ambitious. Leave the uncharged particles and muon aside. Also write something on how will u detect/accelerate the particles
added by :Kamal Galran