

ASP 2018

Workshop for High School Teachers

Ideas for “Masterclasses / Cosmic ray experiments
for teachers”

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CERN S'Cool Lab

They have developed many lab experiments suitable for high school students. Unfortunately they require (sometimes) expensive equipment:

<http://scool.web.cern.ch/experiments>

I think the most ideal of these experiments are:

- Build a Cloud Chamber

 - requires dry ice

- Superconductivity

 - requires liquid nitrogen

Cost depends on local availability of these materials.



CMS (CERN) Virtual visits

A program that does virtual visits for groups of all ages, more information and you can apply for a time here:

<http://cms.web.cern.ch/content/virtual-visits>



Playing with Protons



UK program especially for **primary school** teachers:

<http://www.opendiscoveryspace.eu/en/community/playing-protons-uk-847604>

Here is the agenda of their recent meeting with the speakers and some of their presentation materials and more links:

<https://indico.cern.ch/event/615287/timetable/>

Some relevant materials: CERN -- Build a Cloud Chamber -- Hunting Neutrinos

<http://www.opendiscoveryspace.eu/en/edu-object/cern-laboratory-820284>

<http://www.opendiscoveryspace.eu/en/edu-object/cloud-chamber-workshop-422532>

<http://www.opendiscoveryspace.eu/en/edu-object/hunting-neutrinos-669661>

Seems like one has to register to get more details and cost info

Weather Balloon

Putting a geiger counter and data logger on a weather balloon shows that cosmic rays increase with altitude. Here's one company that I've used before (in the USA) that supplies material for high schools:

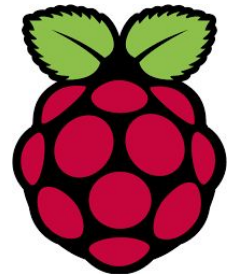
<http://www.stratostar.net>



Cost: Single use weather balloon USD\$ ~300. Experiments and GPS tracking etc. are extra. It's possible to make electronics payloads more cheaply using Arduino or Raspberry Pi kits:

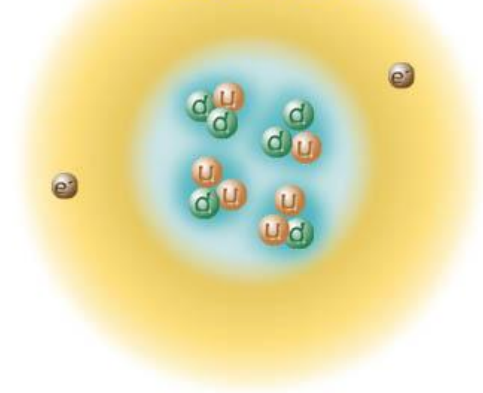
<https://www.arduino.cc/>

<https://www.raspberrypi.org/>



The Particle Adventure

Begin
The Particle Adventure



<http://www.particleadventure.org/>

Program from the US Department of Energy. Games, cartoons, diagrams and interactive teaching -- make particle physics “fun”

Cost: free (if you have a computer and internet access)