Journey through a detector

Equipment	Description & How to Use
Computer with presentation on stand	Runs the presentation slides and show timing.
Black table cloth	Covers the equipment before and after the show.
Cheat sheet	Quick reference guide for the presenter.
Clock	Keeps the 45-minute show on schedule.
Vortex/air cannon	Fires a strong burst of air. Demonstrates detecting something invisible (air) through its effects.
Remote control	Its infrared LED is invisible to the eye but visible through a phone/camera.
Silicon detector prop	prop from CERN detectors of a tracker module, shown to illustrate the innermost detector layer.
Pixel detector + laptop with Pixet software	Real working pixel detector connected to a laptop; displays live particle hits from cosmic rays on screen.
Weakly radioactive rock	Held near/above the pixel detector to increase the rate of detected hits. Keep in its box; never touch directly.



Vortex/air cannon

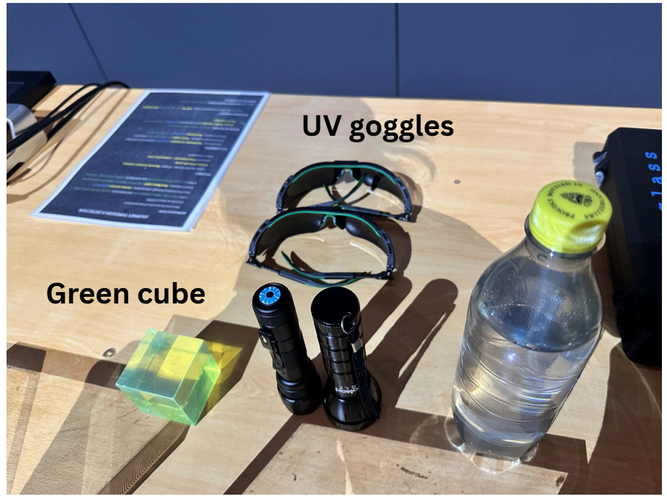


Silicon detector prop



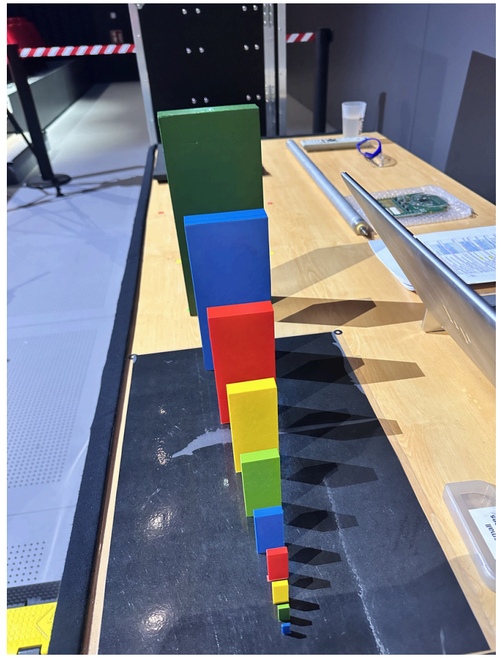
Pixel detector + Weakly radioactive rock (in plastic box)

Safety goggles	Worn by the vortex cannon volunteer for eye protection.
Plexi glass block and glass scintillator	A non-scintillating control sample compared against the real scintillator under UV light.
UV light & flashlight	Shone on the scintillators, plexiglass, and tonic water to show which one glows.
UV goggles (x2)	Worn by presenter and volunteer for eye protection whenever the UV torch is in use.
Tonic water (bottle)	Contains quinine, which glows blue under UV light.
Green cube scintillator	Another scintillator sample.
CMS Lead scintillator	Lead scintillator from the CMS detector. Handle only inside its box, never with bare hands.
Set of dominoes, increasing size	Knocking over the small domino cascades into progressively bigger ones - demonstrates signal amplification in a photomultiplier. The big yellow and red dominoes are stored under the table.

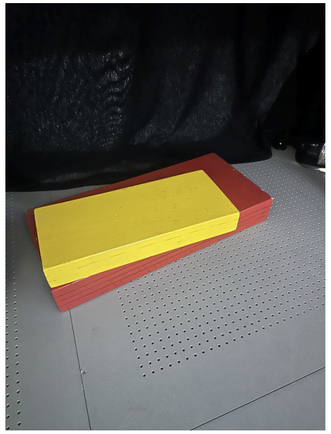


UV light & Flashlight **Tonic water**

Dominoes



Big dominoes to add during the show



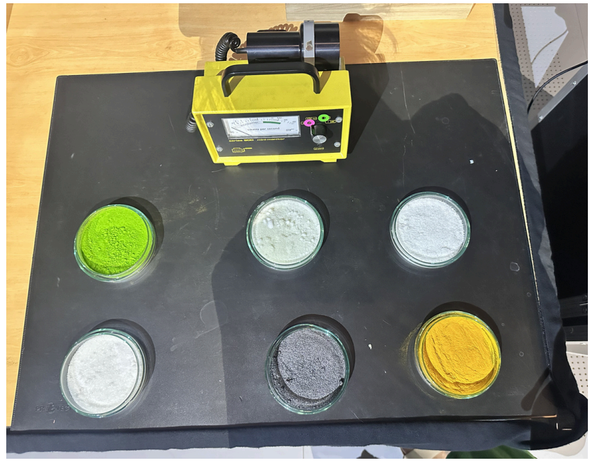
LED scintillator used at CERN



Geiger-Muller (GM) counter	Handheld radiation detector that clicks each time it detects a particle. Volunteer uses the probe (without touching substances) to compare radioactivity of samples.
handheld microphone	Held near the GM counter so its clicks are audible to the audience.
Petri dishes: KCl, NaCl, sugar, green dye colored chocolate, turmeric, and graphite	Volunteer tests each with the GM counter to find the (mildly) radioactive one (KCl/potassium salt).
Muon chamber prop (drift tube model)	Physical model of a muon drift tube (wire + gas-filled cylinder). Light the wire with the torch while explaining ionisation and electron drift for muon detection.
CRT TV, connected with camera	Old cathode-ray tube television used as a stand-in particle accelerator. Turn on to show a live image of the andience. Covered with black cloth when not in use.
Box with CRT TV magnet (strong permanent magnet)	Held near (not touching) the TV screen to bend the electron beam and distort the image - shows how a magnetic field curves charged particles.

Muon Chamber





Petri dishes

CRT TV

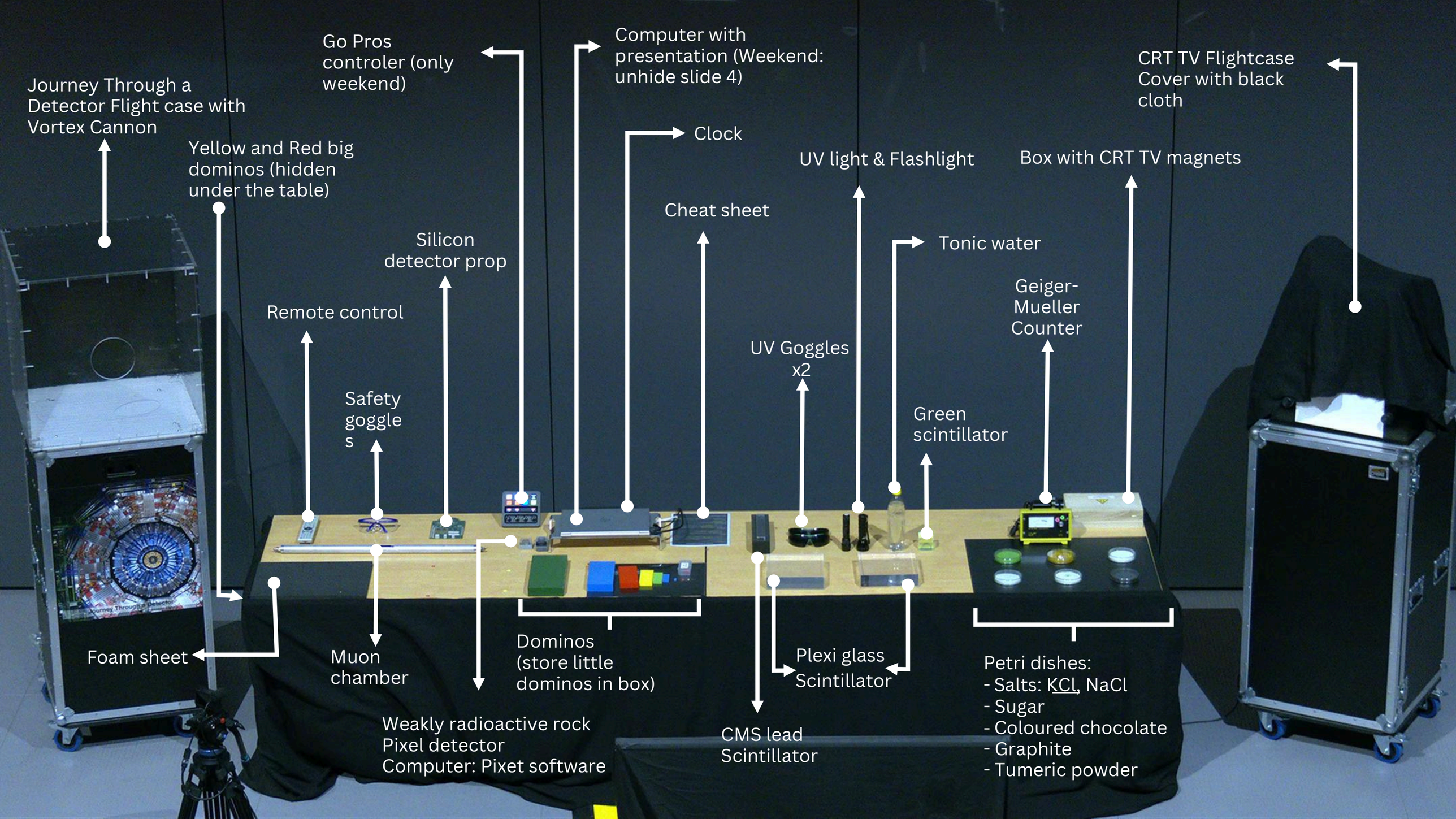


Magnet box CRT TV





Geiger counter


Journey Through a Detector Flight case with Vortex Cannon
Yellow and Red big dominos (hidden under the table)
Go Pros controler (only weekend)
Computer with presentation (Weekend: unhide slide 4)
Clock
Cheat sheet
UV light & Flashlight
Box with CRT TV magnets
CRT TV Flightcase Cover with black cloth
Tonic water
Silicon detector prop
Remote control
Geiger-Mueller Counter
UV Goggles x2
Safety goggles
Green scintillator
Foam sheet
Muon chamber
Dominos (store little dominos in box)
Plexi glass Scintillator
Petri dishes:
- Salts: KCl, NaCl
- Sugar
- Coloured chocolate
- Graphite
- Tumeric powder
Weakly radioactive rock
Pixel detector
Computer: Pixet software
CMS lead Scintillator