JOURNEY THROUGH A DETECTOR

INTRODUCTION

Welcome & security announcement

Questions about CERN

LHC 27km ring, 100m underground and detectors: ALICE, ATLAS, CMS, LHCb

See the invisible through interactions - **Vortex cannon** [volunteer]

Eyes limitation - **Red/Blue Light** – 40 million times/s – every 25 nanoseconds

CMS [Compact Muon Solenoid]: size and layers - Ø15m, 21m long, ~14k tons

TRACKER

Lights we cannot see - IR light: **Remote control / camera**

Silicon detector prop

(optional) **Pixel detector – radioactive rock**

Silicon ionisation

CALORIMETER

Scintillation - **Scintillator vs plastic** [volunteer] with torch and UV light

Fluorescence in nature - **Tonic water** [contains quinine], scorpions

Photomultiplier - **Dominoes** [volunteer] – 32'768 electrons

MUON DETECTOR – muons = 200x mass of electrons

Geiger Muller counter with substances [volunteer] – Potassium salt

Muon chamber

SOLENOID MAGNET

Curving the path of charged particles - **CRT TV** [cathode-ray tube] **with magnet**

(optional) **PARTICLE TRACKS QUIZ** [muon, proton, photon]

WRAP UP & OVERVIEW