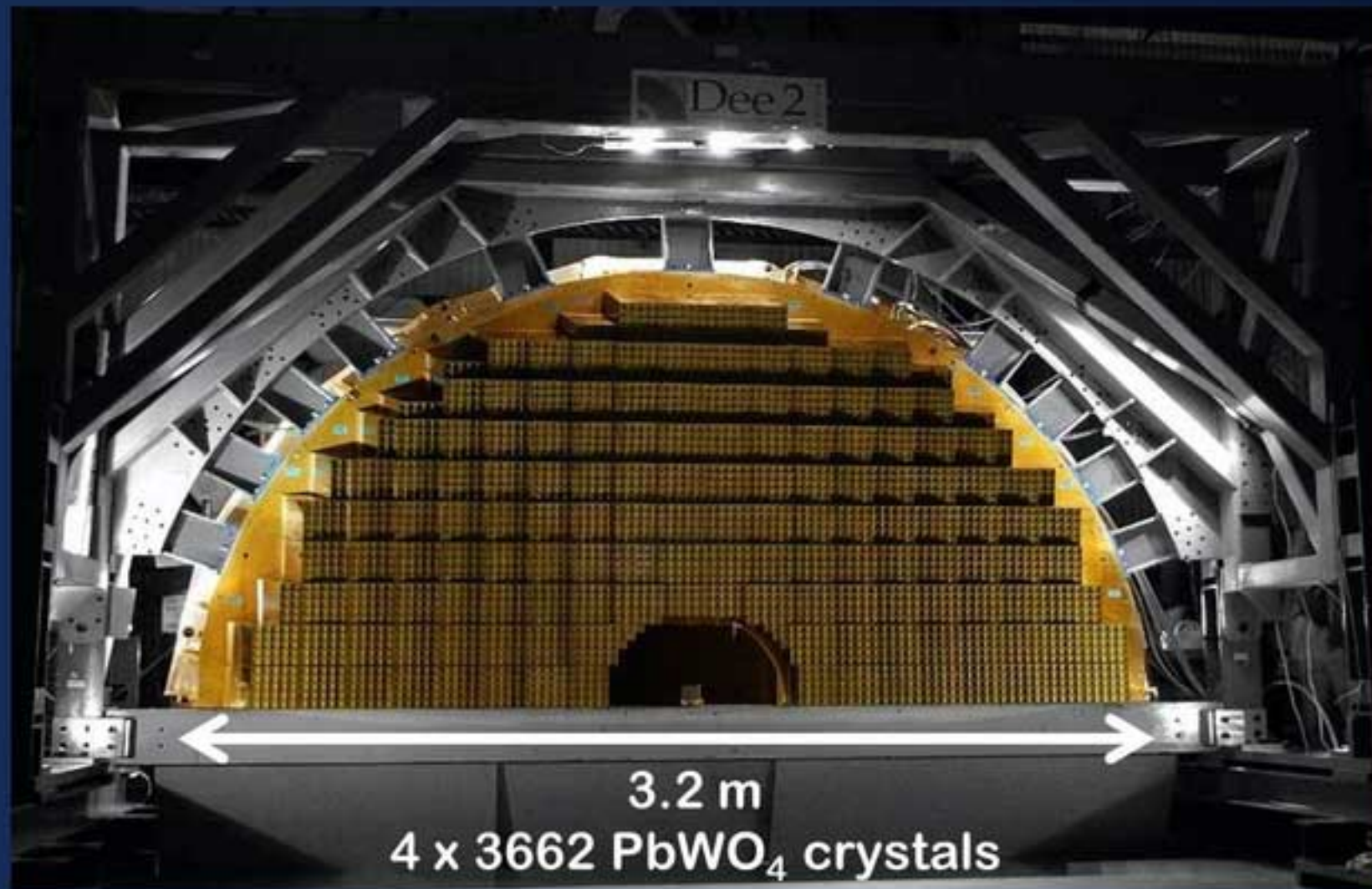


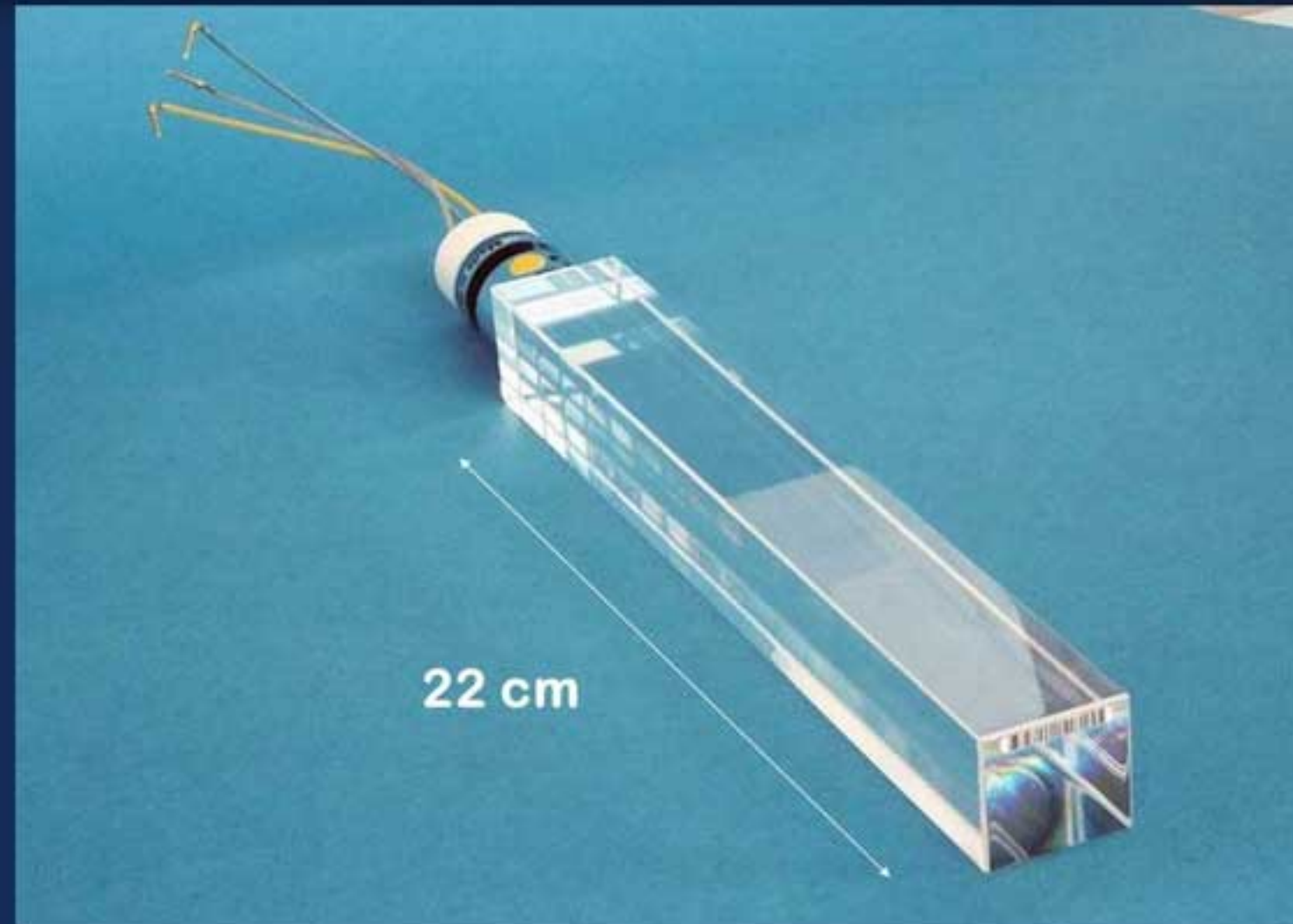
The CMS Endcap Calorimeter at the LHC



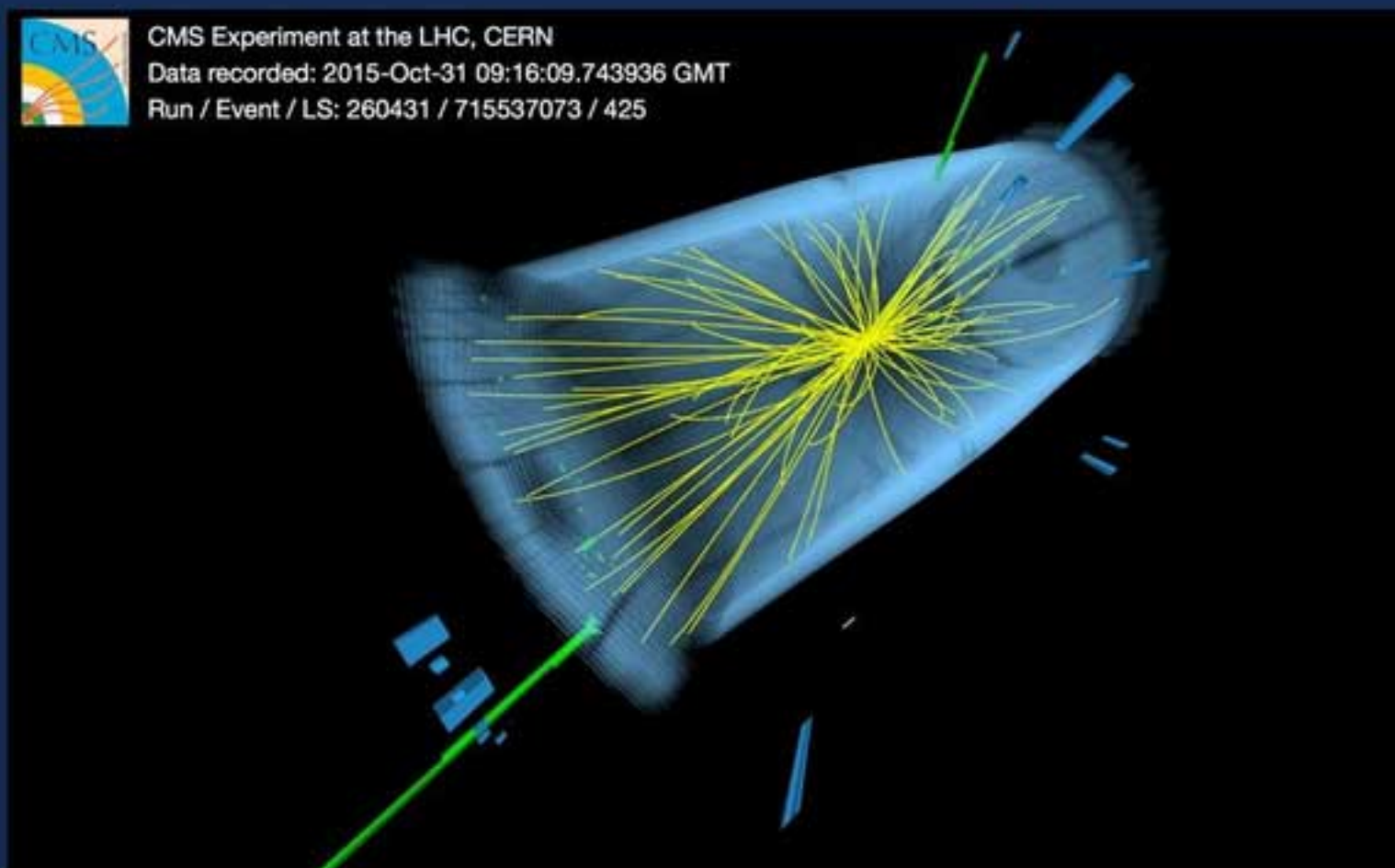
RAL led the design, construction and installation of the **CMS Endcap calorimeters**. A half Endcap (called a “Dee”) is shown here, being readied for transport to the LHC. Each of the four Dees contains ~6 tonnes of special scintillating crystals.

A proton-proton collision in CMS

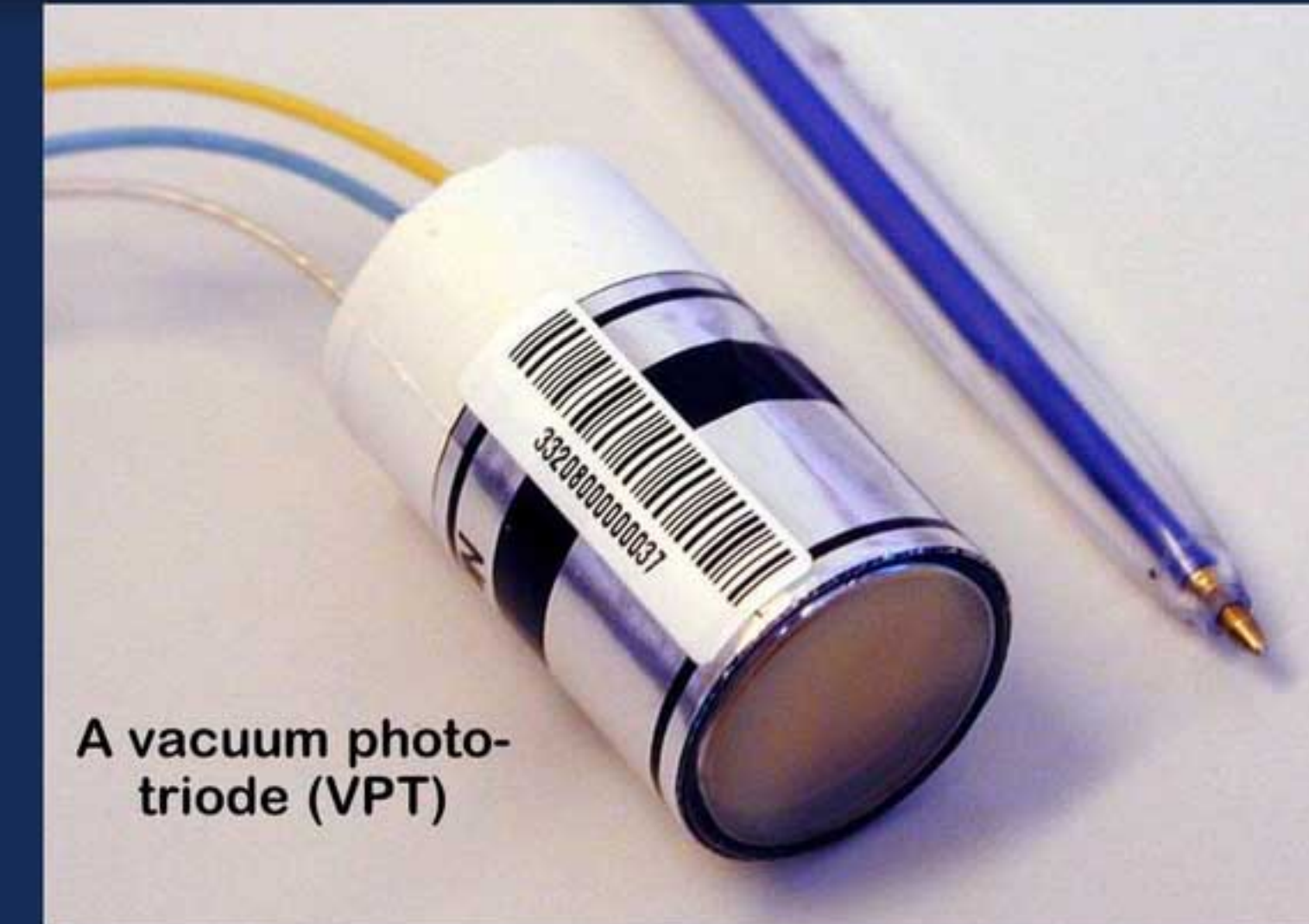
Two very high energy photons (green) have been produced, with one photon detected by crystals in the Endcaps.



The Endcaps contain a total of **14,648 PbWO₄ scintillating crystals**. These are used to detect electrons and photons in the search for new physics.



CMS Experiment at the LHC, CERN
Data recorded: 2015-Oct-31 09:16:09.743936 GMT
Run / Event / LS: 260431 / 715537073 / 425



A vacuum photo-triode (VPT)

RAL led the development of **special photo-detectors called vacuum photo-triodes**, to measure the scintillation light from the crystals. All 14,648 VPTs were tested and approved at RAL.

This is the most dramatic two photon event yet seen in CMS

The photons have a combined energy that is more than 11% of the entire LHC beam energy

