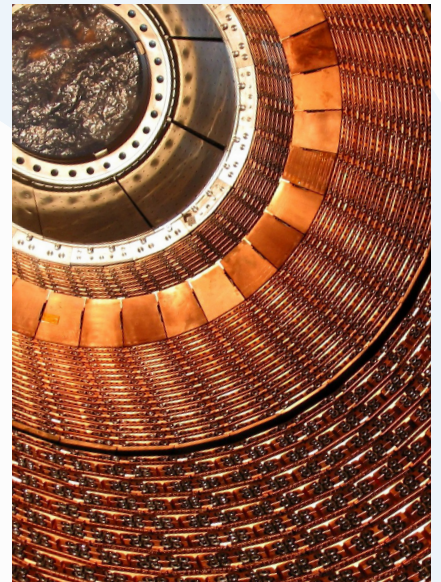


CALORIMETERS

Calorimeters measure the energy of particles created in high-energy LHC collisions. They are designed to absorb most of the particles coming from a collision, forcing them to deposit all of their energy and stop within the detector. ATLAS calorimeters consist of layers of an “absorbing” high-density material that stops incoming particles, interleaved with layers of an “active” medium that measures their energy.



LIQUID ARGON CALORIMETER

The Liquid Argon (LAr) Calorimeter surrounds the ATLAS Inner Detector and measures the energy of electrons, photons and hadrons. It features layers of metal (either tungsten, copper or lead) that absorb incoming particles, converting them into a “shower” of new, lower energy particles. These particles ionise liquid argon sandwiched between the layers, producing an electric current that is measured. By combining all of the detected currents, physicists can determine the energy of the original particle that hit the detector.

The central region of the calorimeter is specially designed to identify electrons and photons. It features a **characteristic accordion structure**, with a honeycomb pattern, to ensure that no particle escapes unchallenged.

To keep the argon in liquid form, the **calorimeter is kept at -184 °C**. Specially-designed, vacuum-sealed cylinders of cables bring the electronic signals from the cold liquid argon to the warm area where the readout electronics are located.



TILE HADRONIC CALORIMETER

The Tile Calorimeter surrounds the LAr calorimeter and measures the energy of hadronic particles, which do not deposit all of their energy in the LAr Calorimeter. It is made of layers of steel and plastic scintillating tiles. As particles hit the layers of steel, they generate a shower of new particles. The plastic scintillators in turn produce photons, which are converted into an electric current whose intensity is proportional to the original particle's energy.

The Tile Calorimeter is made up of about **420,000 plastic scintillator tiles** working in sync. It is the heaviest part of the ATLAS experiment, weighing almost 2900 tons!

