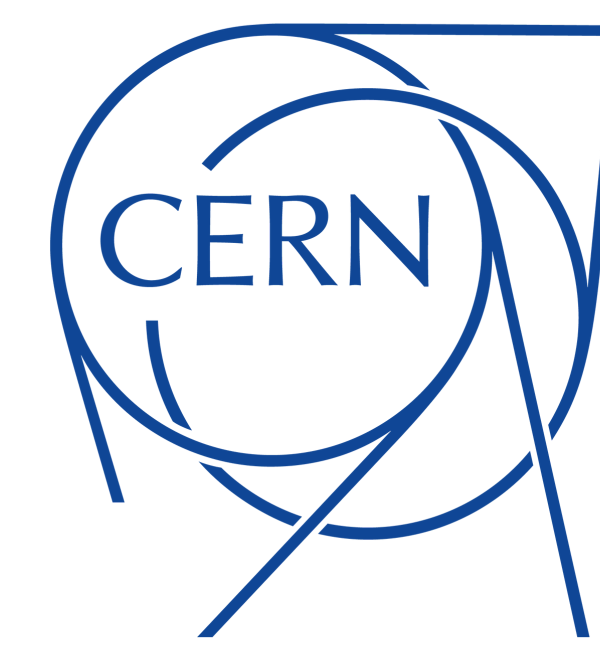


WEB VISUALIZATION OF ATLAS DATA



CORAL IZQUIERDO MUÑIZ

IN/CORAL-IZQUIERDO

CORAL2742

SUPERVISORS: MATHIEU BIAUT & ETIENNE FORTIN



ATLAS EXPERIMENT

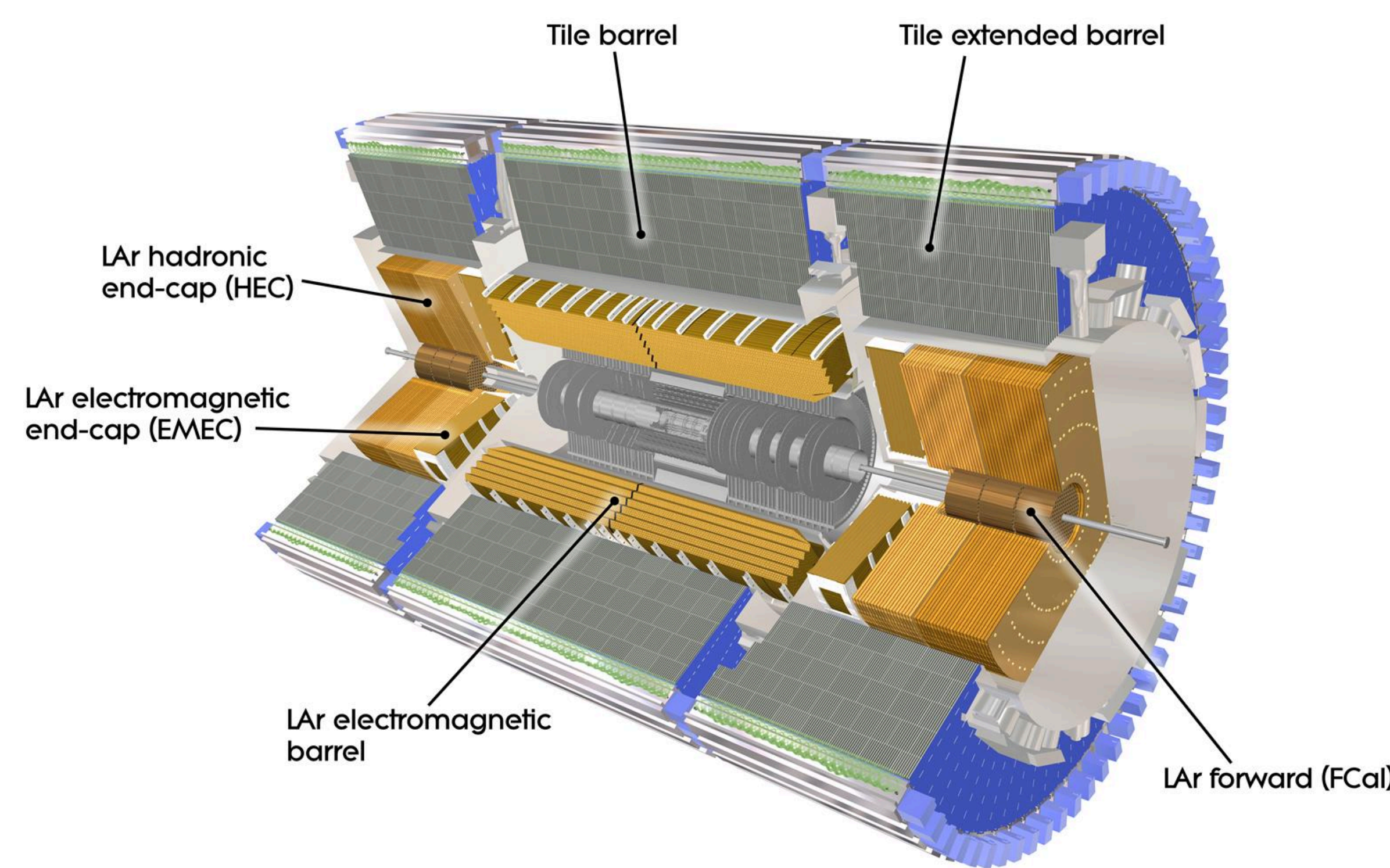
INTRODUCTION

ATLAS is a detector of the **Large Hadron Collider** (LHC), which is investigating different areas, from the Higgs boson to particles that may make up dark matter and generating a **huge flow** of data.

The **Liquid Argon (LAr) Calorimeter** surrounds the ATLAS Inner Detector and measures the energy of **electrons, photons** and **hadrons**. By combining all of the detected currents, physicists can determine the **energy** of the original particle that hit the detector.

LAr Operation team monitors many records and stores them in several databases. From these databases, several analysis scripts are run to produce summary plots in a **daily** process.

This website will help the LAr Operations team to **predict** problems on the front-end hardware to do preventive replacements and **don't lose data**.

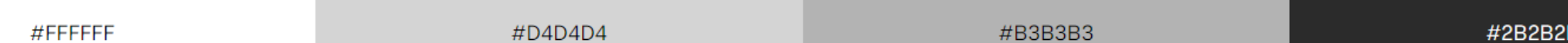


INITIAL PROBLEM AND LIMITATIONS

- Previous basic website made with **PHP**
- Not user friendly
- Not adaptative to the dimensions of the device (**non-responsive**)
- **Difficulties** to incorporate **new data** (non-web experts)
- No previous documentation

VISUAL DESIGN

- Open Sans Font
- Official ATLAS logo with transparent background



TECHNOLOGIES USED

- Django
- Bootstrap
- HTML, CSS, JavaScript
- AJAX
- DCS (Distributed Control System) databases
- COOL (run Condition) databases

IMPROVEMENTS AND GOALS

- **Real-time** display
- Loading **speed**
- Advanced search **filters** (by year, by board name, run name, ATLAS status...)
- Easy to **modify**
- **User friendly**
- **Responsive** and mobile-compatible

