

# PROJECT EPLANET

## Publishable Summary-P2

### Figures



Fig. 1. The EPLANET logo

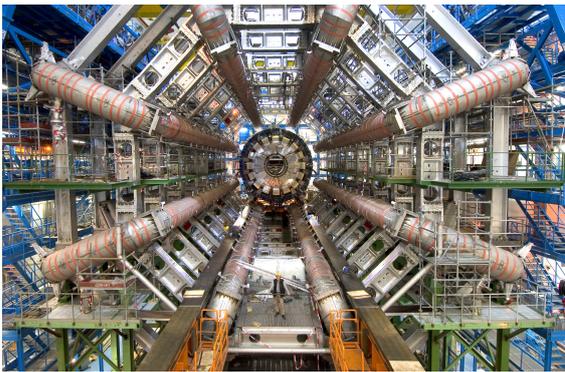


Fig. 2. ATLAS central calorimeter

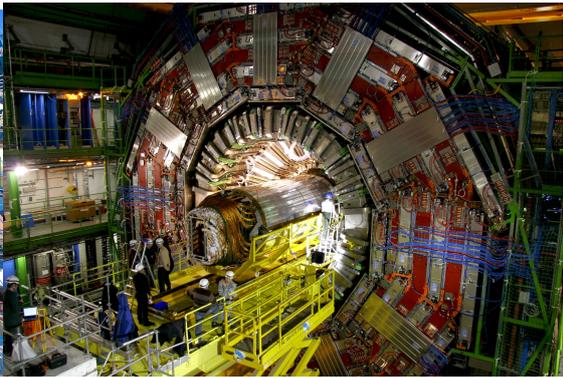


Fig. 3. CMS central calorimeter

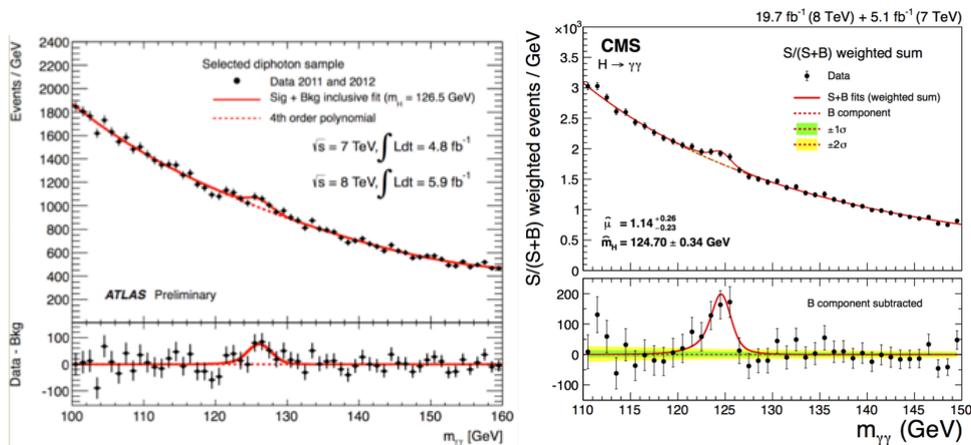


Fig. 4. ATLAS (left) and CMS (right): mass spectrum of photon pairs originating from high energy proton-proton collisions. In the lower curves, the same spectrum, after background subtraction, shows a peak with a significance of 5 standard deviations. These observations were the basis of the joint announcement of the Higgs boson discovery on July 4th, 2012.



Fig. 5. Francis Englert (left) and Peter Higgs at the seminar at CERN when ATLAS and CMS announced the discovery of a particle with properties compatible with those of the particle predicted by the two theoretical physicists in 1964.



Fig. 6. Pierre Auger Observatory: a selection of images of the detectors. On the background, the Aconcagua massif in the Andes

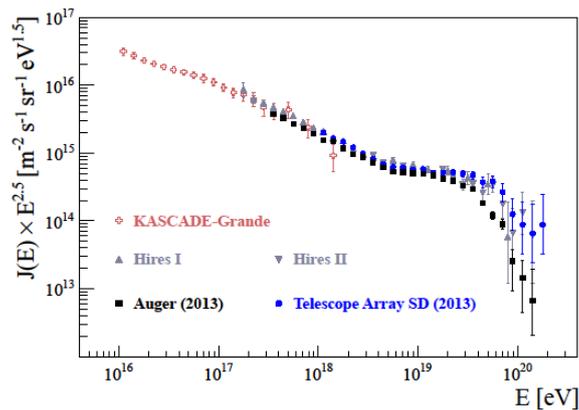


Fig. 7. Compilation of measurements of the energy spectrum of cosmic rays by present experiments. In order to graphically enhance the structures, the flux is shown multiplied by a power of the energy,  $E^{2.5}$ .

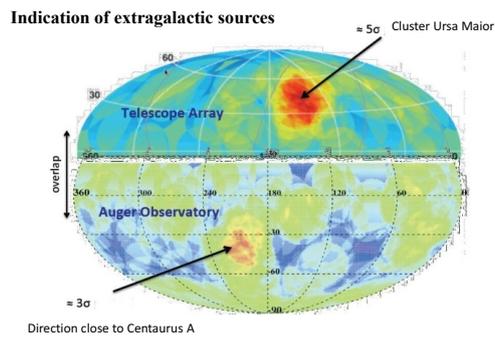


Fig. 8. Summary of the search of extra-galactic sources of very high energy cosmic rays from Auger and Telescope Array. Two regions emerge in the sky map with clear but modest statistical significance, Ursa Maior in the Northern and Centaurus A in the Southern hemisphere.

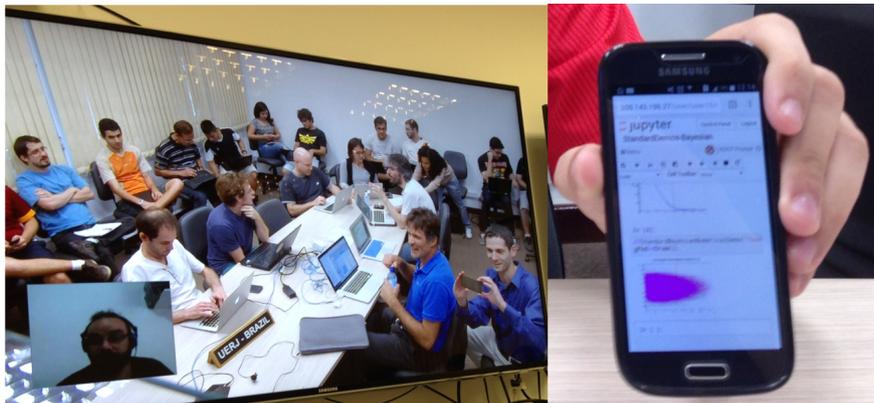


Fig. 9. Tutorial on *Machine Learning* with hands-on exercises presented in the form of ROOT macros and ROOT notebooks. Most of the students used laptops to run ROOT interactively on a server, while several students used their smartphones. Course taught by experts from CERN: Sergei Gleyzer and Lorenzo Moneta. Universidad do Estado de Rio de Janeiro, 15-30 November 2015.