

AtmoHEAD 2018

**Villa Orlandi – Anacapri, Island of Capri (NA) - Italy
September 24th-26th, 2018**

PREFACE

AtmoHEAD is a periodic 3-day international workshop on atmospheric monitoring and calibration for high-energy astroparticle detectors and experiments, with a view towards next-generation facilities.

The event follows the tradition of previous AtmoHEAD (*ATmospheric MOnitoring for High Energy Astroparticle Detectors*) conferences - AtmoHEAD 2013 in Saclay, 2014 in Padova and 2016 in Olomouc.

The atmosphere is an integral component of many high-energy astroparticle detectors. These include Imaging Atmospheric Cherenkov Telescopes (IACTs) and ground or space based cosmic-ray extensive air shower detectors. All these observatories use the atmosphere as a giant calorimeter where cosmic rays and gamma rays deposit their energy and initiate Extensive Air Showers; it is also the medium through which the resulting Cherenkov and Fluorescence light propagates, and through which it is attenuated and scattered before reaching the detectors. Clearly, a precise and quantitative monitoring of the atmospheric aerosol and molecular conditions are mandatory for an accurate reconstruction of the detected events. New and common monitoring and calibration instruments including lidars, distant laser facilities, cloud monitors, all sky cameras, sun/moon photometers, satellite observations, as well as Monte Carlo simulations, are among the most important tools of these observatories. The workshop focuses on the state-of-the-art techniques and instruments. In addition, some astroparticle detectors can observe electrical phenomena developed in atmosphere, representing an interesting opportunity to study the characteristics of these peculiar events from a different point of view.

The main topics of the conference, treated in dedicated sessions, are :

- The influence of the atmosphere on the measurements of present and future UHECR and Gamma-Ray experiments
- Analysis techniques and instruments
- Transient Luminous Events and general topics in atmospheric electricity