



千葉大学大学院理学研究科附属

ハドロン宇宙国際研究センター

International Center for Hadron Astrophysics

June ICEHAP Seminar

Date **June 22nd Wednesday 15 : 00~17 : 00**

Location **ICEHAP Office (Engineering Research Bldg.1 Room609-1)**

By Professor Hiroaki Menjo , Nagoya University

Title

『**Test of hadronic interaction models**

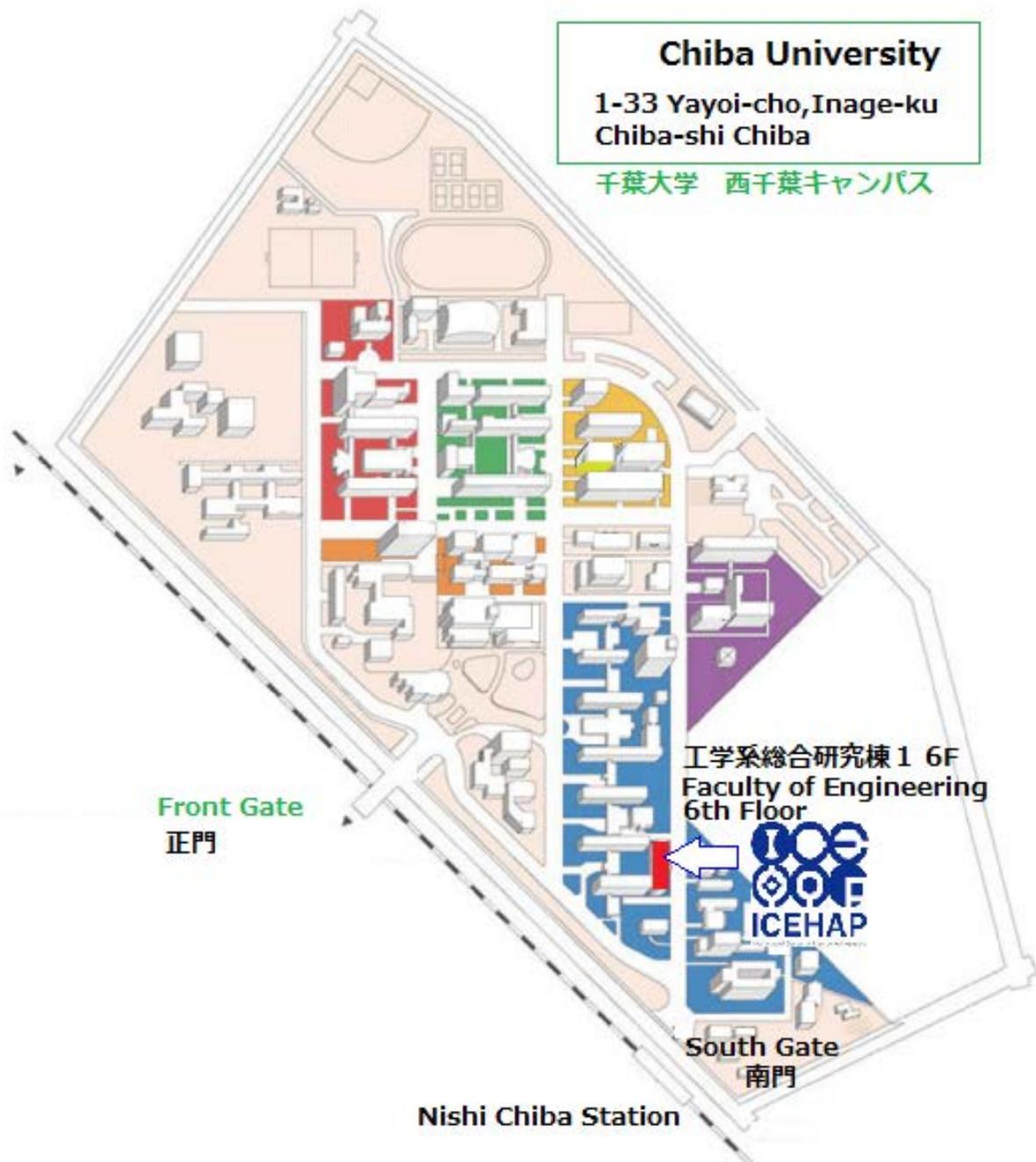
by a LHC forward experiment; LHCf』

Abstract

Hadronic interaction models are widely used in many Monte-Carlo simulations for cosmic-ray physics as well as particle physics. For observation of Ultra-High Energy Cosmic Rays (UHECRs), MC simulation is one of the essential tools for estimating information of primary cosmic-rays from the observed air showers. Currently the Pierre Auger and the Telescope Array experiments are observing UHECRs by using air-shower technique and publishing exciting results. However, the precision of chemical composition measurement, which is one of fundamental observables, is limited by the uncertainty of hadronic interaction model which used in air-shower simulation.

The LHCf experiment is one of the seven physics experiments in the Large Hadron Collider (LHC). The LHCf was designed to testing hadronic interaction models at LHC with the proton-proton collision energy of $\sqrt{s} = 13\text{TeV}$, which is equivalent to 0.9×10^{17} eV in the laboratory frame. The LHCf detector measures photons, π^0 s and neutrons emitted in the very forward region of collisions, the pseudo-rapidity range of $\eta > 8.4$. The LHCf had operations in 2010, 2013 and 2015 with several collision energies of proton-proton from 0.9TeV up to 13TeV and with proton-lead collisions at $\sqrt{s_{NN}} = 5\text{TeV}$. I will present the results and prospects of the LHCf experiment.

Location:



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