

CENPA Seminars- Autumn 2005

Tuesday, October 18, 2005

CENPA/PHYSICS JOINT SEMINAR

SPEAKER: Hartmut Gemmeke, Forschungszentrum Karlsruhe, Institute for Data Processing and Electronics, Karlsruhe, GERMANY

TITLE: *"Detection and Imaging of Cosmic Ray Air Showers by Radio Flashes"*

LOCATION: Rm. C-520, PAT

TIME: 2:30PM

ABSTRACT: The nature of ultrahigh-energy cosmic rays (UHECRs) at energies $>10^{20}$ eV remains a mystery. They are likely to be of extragalactic origin, but should be absorbed within 50 Mpc through interactions with the cosmic microwave background. Also unclear is whether UHECRs consist of protons, heavy nuclei, neutrinos or gamma-rays. To resolve these questions, larger detectors with higher duty cycles and which combine multiple detection techniques are needed. Radio emission from UHECRs, on the other hand, is unaffected by attenuation, has a high duty cycle, gives calorimetric measurements and provides high directional accuracy. There are an inflationary rising number of new experiments using interaction of cosmic rays with air, water, and solids producing radio ashes. After a short description of these experiments the talk will focus on the detection of radio flashes from UHECRs with low-cost digital radio receivers. The LOPES experiment demonstrates for the first time that the radiation can be understood in terms of the geo-synchrotron effect and has a coherent appearance. The results show that it should be possible to determine the origin, energy, and composition of UHECRs with combined radio and particle detectors, and to detect ultrahigh-energy neutrinos.

Tuesday, October 25, 2005

CENPA SEMINAR

SPEAKER: Dr. Zinjin Guo, University of Hawaii

TITLE: *"Study on 0^{++} scalars and χ_{cJ} at BESII"*

LOCATION: CENPA Conference Room, NPL

TIME: 2:30PM

ABSTRACT: The Beijing Spectrometer (BES) is a general-purpose solenoidal detector at the Beijing Electron Positron Collider (BEPC). The beam energy of BEPC is in the range from 1.5 to 2.8 GeV. The main physics goal is to study charm and tau physics. Using a sample of 58 million J/ψ events obtained with the BESII detector, the 0^{++} scalars σ , $f_0(1500)$ and $f_0(1710)$ are studied. Hadronic decays of the χ_{cJ} states are studied with 14 million $\psi(2S)$ events collected at BESII. Results for $\chi_{c0} \rightarrow f_0(980)f_0(980)$, $\chi_{cJ} \rightarrow K^*(892)K^*(892)\text{-bar}$, and a partial wave analysis of $\chi_{c0} \rightarrow \pi^+\pi^-K^+K^-$ in $\psi(2S)$ radiative decay will be reported.