

YongPyong 2012 Winter Conference on Particle Physics

Report of Contributions

Contribution ID: 0

Type: **not specified**

Top A_FB and charge asymmetry Top A_FB and charge asymmetry

Monday 20 February 2012 09:00 (40 minutes)

Presenter: Prof. YU, Chaehyun (KIAS)

Session Classification: Plenary - phenomenology

Contribution ID: 1

Type: **not specified**

Flavor symmetry relating large U_{e3} to the neutrino masses

Monday 20 February 2012 09:40 (40 minutes)

The non-zero and sizable value of U_{e3} puts pressure on flavor symmetry models which predict an initially vanishing value. Hence, the tradition of relating fermion mixing matrix elements with fermion mass ratios might need to be resurrected. The recently observed non-vanishing value of U_{e3} can be related numerically to the ratio of solar and atmospheric mass-squared differences. We analyze the prediction of some of these possibilities and construct explicit flavor symmetry models that predict these features.

Presenter: Prof. TANIMOTO, M. (Niigata U.)

Session Classification: Plenary - phenomenology

Contribution ID: 2

Type: **not specified**

Effective interactions of dark matter

Monday 20 February 2012 10:40 (40 minutes)

Presenter: Prof. CHEUNG, Kingman (National Taiwan U.)

Session Classification: Plenary - phenomenology

Contribution ID: 3

Type: **not specified**

Forward-backward asymmetry of $B \rightarrow K_J (-> K \pi)$ $\mu^+ \mu^-$ in SM and new physics models

Monday 20 February 2012 11:20 (40 minutes)

Presenter: Prof. LU, Cai-Dian (IHEP)

Session Classification: Plenary - phenomenology

Contribution ID: 4

Type: **not specified**

Shear and Bulk Viscosities of a Gluon Plasma in Perturbative QCD

Monday 20 February 2012 12:00 (40 minutes)

We calculate the leading order bulk viscosity ζ of a gluon plasma in perturbative QCD with the finite angle non-collinear inelastic scatterings neglected by the previous calculation of Arnold, Dogan and Moore (ADM) included. We agree with the ADM's leading order result within errors. In contrast, our previous result on shear viscosity η is smaller than that of Arnold, Moore and Yaffe (AMY) by 10-20% at intermediate couplings due to finite angle scatterings. Our result shows that the gluon plasma in the perturbative region is equally conformal (with almost the same ζ) but more perfect (with smaller η) than previously obtained. We also generalize our result to a general $SU(N_c)$ pure gauge theory and summarize the current status of the viscosity computations in QCD.

Presenter: Prof. CHEN, Jiunn-Wei (National Taiwan U.)

Session Classification: Plenary - phenomenology

Contribution ID: 5

Type: **not specified**

Current status of RENO

Tuesday 21 February 2012 09:00 (45 minutes)

Presenter: Prof. JOO, Kyung Kwang (Chonnam National U.)

Session Classification: Plenary - Experimental

Contribution ID: 6

Type: **not specified**

Progress & Status of Belle-II

Tuesday 21 February 2012 09:45 (25 minutes)

Belle-II experiment is a future planned experiment for a super B-meson factory collider to be built in KEK, Japan. I review present status and prospect of the Belle-II experiment.

Presenter: Prof. WON, Eunil (Korea Univ.)

Session Classification: Plenary - Experimental

Contribution ID: 7

Type: **not specified**

Tevatron results

Tuesday 21 February 2012 10:50 (45 minutes)

The CDF and D0 experiments finished their 10-year Run 2 operation successfully on Sep. 30, 2011. The Tevatron delivered about 12 fb⁻¹ of collision data to each experiment during Run 2 and many important measurements and discoveries had been made by analyzing the data. In this talk, some of latest physics results from the Tevatron experiments will be reviewed and discussed.

Presenter: Prof. YU, Intae (Sungkyunkwan U.)

Session Classification: Plenary - Experimental

Contribution ID: 8

Type: **not specified**

New Results at CMS

Tuesday 21 February 2012 11:35 (45 minutes)

The LHC delivered more than 5 /fb data and the CMS collected the data about 5.2 /fb with near 90% efficiency. The most of major physics channels has been already finished resulting in submission of papers. We show the recent results on new particle searches at CMS based on 2011 data. These include Higgs, heavy gauge boson, ED as well as SUSY particles. Finally the prospect of 2012 will be discussed.

Presenter: Prof. KIM, Donghee (Kyungpook National U.)

Session Classification: Plenary - Experimental

Contribution ID: 9

Type: **not specified**

M2-branes with Flux and Their Reduction to String Theory

Wednesday 22 February 2012 11:20 (40 minutes)

We construct the gauge invariant interaction terms between the world-volume fields of multiple M2-branes and the 3- and 6-form fields in the context of ABJM theory. with $U(N) \times U(N)$ gauge and show that the obtained dimensionally reduced couplings coincide with the effective action of D2-branes coupled to R-R 3- and 5-form fields in type IIA string theory. As an application of our formulation, we turn on constant flux terms and consider their supersymmetric completions with $N=2,4,6$ supersymmetries. Employing the Mukhi-Papageorgakis Higgsing procedure, we find the connection between the $N=2,4$ theories with flat directions in their potential and the $N=2, 4$ mass-deformed $(2+1)$ -dimensional super Yang-Mills theories. We also comment on the relation between our mass-deformed ABJM theories and the $N=1$ and $N=2$ mass-deformed super Yang-Mills theories constructed by Polchinski and Strassler in the context of type IIB theory.

Presenter: Prof. KIM, Yunbai (Sungkyunkwan U.)

Session Classification: Plenary - string

Contribution ID: 10

Type: **not specified**

6 = 2+4 : What can we learn about 4D field theory from 2D Conformal Field Theory : Revenge of W-algebra and Toda Field Theories

Wednesday 22 February 2012 10:40 (40 minutes)

Recent development in 4 Dimensional Quantum Field Theories have revealed that some of 2 Dimensional CFT techniques which have been developed last 20 some years are relevant, especially through the works of AGT. Instanton sector calculation (very difficult) can easily be done by 2D Conformal Field theory calculations. I wil review this connection and introduce some of my earlier works (more than 20 years old) which might be relevnat to these exciting developments.

Presenter: Prof. NAM, Soonkeon (Kyunghee U.)

Session Classification: Plenary - string

Contribution ID: **11**

Type: **not specified**

Constructive Wall-Crossing

Wednesday 22 February 2012 09:00 (40 minutes)

Presenter: Prof. YI, Piljin (KIAS)

Session Classification: Plenary - string

Contribution ID: 12

Type: **not specified**

N-Cube and Junctions in 6d (2,0) Theories

Wednesday 22 February 2012 09:40 (40 minutes)

Presenter: Prof. LEE, Kimyeong (KIAS)

Session Classification: Plenary - string

Contribution ID: 13

Type: **not specified**

Gregory-Laflamme instability and a wider class of hypercylindrical spacetime solutions

Wednesday 22 February 2012 12:00 (40 minutes)

Most hypercylindrical black string/brane spacetime backgrounds are unstable under small long wavelength perturbations along the string/brane directions. This is the so-called Gregory-Laflamme instability. After giving a brief review on the recent developments on this issue, I motivate why a wider class of hypercylindrical spacetime solutions is needed to be studied more. Such solutions in five-dimensional Einstein gravity characterized by mass density and tension and in four-dimensional theory with cosmological constant will be presented. Their geometrical properties are also discussed briefly. Interestingly, the solutions corresponding to most tension values contain naked curvature singularities. Considering physical collapsing processes from initial cylindrical matter distributions having arbitrary tensions, it raises a question about why the regular solution is so special in the space of tension parameter. Some implications of our results are finally discussed.

Presenter: Dr KANG, Gungwon (KISTI)**Session Classification:** Plenary - string

Contribution ID: 14

Type: **not specified**

BES-III Recent results and future prospects

Thursday 23 February 2012 09:00 (45 minutes)

BESIII is a new, state-of-the-art 4π detector at the recently upgraded BEPCII two-ring e^+e^- collider at the Institute for High Energy Physics in Beijing. The detector has been in operation for nearly three years, during which time it collected the world's largest data samples of J/ψ , ψ' and $\psi(3770)$ decays. These data are being used to make interesting and unique studies of light-hadron spectroscopy, precision charmonium physics and high-statistics measurements of D meson decays. Order-of-magnitude increases in these data samples, as well as a large data set at a cm energy above the $D_s+D_s^-$ threshold are planned for the near future. This talk will give early results on light hadron and charmonium physics as well as prospects for future results for these as well as for charmed meson physics.

Presenter: Prof. OLSEN, Steven (Seoul National U.)

Session Classification: Plenary - Outlook

Contribution ID: 15

Type: **not specified**

Some Ideas on Higgs boson and Cold Dark Matter (CDM)

Thursday 23 February 2012 10:50 (45 minutes)

I present some ideas on Higgs boson and cold dark matter, and the interplay between the two different subjects.

Presenter: Prof. KO, Pyungwon (KIAS)

Session Classification: Plenary - Outlook

Contribution ID: **16**

Type: **not specified**

The KoRIA project

Thursday 23 February 2012 09:45 (45 minutes)

Presenter: Prof. KIM, Sunkee (Seoul National U.)

Session Classification: Plenary - Outlook

Contribution ID: 17

Type: **not specified**

Summary & Acknowledgment

Thursday 23 February 2012 11:35 (30 minutes)

Presenter: Prof. LEE, Bum-Hoon (CQeST, Sogang U.)

Session Classification: Plenary - Outlook

Contribution ID: **18**

Type: **not specified**

Emergent Spacetime and Cosmic Inflation

Monday 20 February 2012 19:00 (30 minutes)

We will show how cosmic inflation can be generated by conformal Hamiltonian system in emergent gravity. We will also discuss a background independent completion of the spacetime generation through the cosmic inflation.

Presenter: Prof. YANG, Hyun Seok (CQUeST, Sogang Univ.)

Session Classification: Parallel: S1

Contribution ID: 19

Type: **not specified**

Reconstructing Dark Energy

Monday 20 February 2012 19:30 (30 minutes)

Nature of dark energy is one of the biggest unknowns of the modern cosmology. I will summarize general attempts to reconstruct the expansion history of the universe and to probe the nature of dark energy. Reconstruction methods can be broadly classified into parametric and non-parametric approaches. Presenting the analysis of the most recent cosmological data, some pitfalls of each approach to be guarded against during cosmological reconstruction will be summarised. Based on these analyses and by considering the current status of the data, I will then discuss some realistic-agnostic approaches on confronting cosmological models to the data.

Presenter: Dr SHAFIELOO, Arman (IEU, Ewha W. Univ.)

Session Classification: Parallel: S1

Contribution ID: 20

Type: **not specified**

Supersymmetric Double Field Theory

Monday 20 February 2012 20:20 (30 minutes)

This talk aims to illustrate our recent supersymmetric extension of double field theory and its connection to supergravity. In terms of novel stringy differential geometry we propose, our action consists of five simple terms - two bosonic plus three fermionic - and manifests not only diffeomorphism and one-form gauge symmetry of B-field, but also $O(10,10)$ T-duality as well as a direct product of two local Lorentz symmetries, $SO(1,9)$ times $SO(9,1)$. A gauge fixing that identifies the double local Lorentz groups reduces our action to the N=1 supergravity in ten dimensions.

Presenter: Dr LEE, Kanghoon (CQUeST)**Session Classification:** Parallel: S1

Contribution ID: 21

Type: **not specified**

Time Dependent Holography

Monday 20 February 2012 20:50 (20 minutes)

We construct the gravity background which describes the dual field theory with aging invariance. We choose the decay modes of the bulk scalar field in the internal spectator direction to obtain the dissipative behavior of the boundary correlation functions of the dual scalar fields. In particular, the two-time correlation function at zero temperature has the characteristic features of the aging system: power law decay, broken time translation and dynamical scaling. We also construct the black hole backgrounds with asymptotic aging invariance. We extensively study characteristic properties of the finite temperature two-point correlation function via analytic and numerical methods. We also obtain the analytic form of the shear viscosity at the low temperature limit.

Presenter: Dr JEONG, Jaehoon (Yonsei Univ.)**Session Classification:** Parallel: S1

Contribution ID: **22**

Type: **not specified**

TBA

Monday 20 February 2012 21:10 (20 minutes)

Presenter: Dr KIM, Hongbin (Yonsei Univ.)

Session Classification: Parallel: S1

Contribution ID: 23

Type: **not specified**

Study of LFV decays $B \rightarrow l + \tau^-$ at Belle

Monday 20 February 2012 19:20 (20 minutes)

Lepton-Flavor-Violating B decays $B \rightarrow l + \tau^-$ ($l = e, \mu$) are forbidden in the Standard Model(SM), but they are predicted to occur in many theories beyond SM. Observation of these decays would be clear evidence of physics beyond SM. We present a study of signal and background suppression using Neural Network method and expected upper limit in Belle experiment. Also, We present the result of comparison between data and MC.

Presenter: Ms SOHN, Youngsoo (Yonsei U.)

Session Classification: Parallel: E1

Contribution ID: 24

Type: **not specified**

Dalitz plot analysis of $D \rightarrow K_s K K$ for ϕ_3 measurement at Belle

Monday 20 February 2012 19:00 (20 minutes)

Dalitz plot analysis of $B \rightarrow DK$, $D \rightarrow Ksh+h^-$ ($h = K$ or π) is one of the promising methods for the precise measurement of CKM angle ϕ_3 . We report a study of Dalitz plot analysis of the neutral D meson decay to $K_s K + K^-$ final state. This study is based on a large data sample accumulated with the Belle detector at the KEKB e^+e^- collider.

Presenter: Dr IWABUCHI, Masaya (Yonsei U.)

Session Classification: Parallel: E1

Contribution ID: 25

Type: **not specified**

AMGA Metadata catalogue service for managing mass data of high-energy physics

Monday 20 February 2012 20:40 (20 minutes)

Huge amounts of data are produced in high-energy physics experiments. We need to use a metadata catalogue service to manage these data and files effectively. AMGA is a gLite-metadata catalogue service designed to offer efficient use to metadata for files stored on the Grid. AMGA supports the various databases(Oracle, PostgreSQL, MySQL, SQLite) connection and APIs of the various programming languages(C++, Java, Python, Perl). And AMGA provides not only the easy interface what look like linux file system but also the Native SQL. This properties of AMGA mean that the almost of all High-energy physics experiments can use AMGA very easily. And we can share the data using the special features of AMGA that are replication and federation. For that reason, the Belle II Data Handling system has used AMGA. In this paper, we describe AMGA's properties in detail and offer cases that use AMGA in each programming language.

Presenter: PARK, Geunchul (KISTI)**Session Classification:** Parallel: E1

Contribution ID: 26

Type: **not specified**

AMGA Manager for Efficient Handling of Grid-Based Metadata at Belle II

Monday 20 February 2012 21:00 (20 minutes)

AMGA is an official EMI metadata catalogue service developed to offer access to metadata for files stored on the Grid and to ensure high scalability to metadata systems due to both data replication/federation in a distributed environment and compatibility with EMI other components. That's why the Belle II Data Handling system used AMGA metadata catalog as main technology for the management of Belle II metadata. Besides, we had developed general-purpose GUI toolkit that is called AMGA Manager, in order to use easily AMGA service and provide a user-friendly interface. After that, we developed AMGA Manager reflected several requirements of Belle II community, which are consisted of fast data retrieval for large scale metadata and fast constructing graphically hierarchical directories. In this paper, we describe not only the general functions in AMGA Manager but specialized and improved functions for Belle II.

Presenter: HUH, Taesang (KISTI)**Session Classification:** Parallel: E1

Contribution ID: 27

Type: **not specified**

Progress on Data Handling system at Belle II experiment

Monday 20 February 2012 20:00 (20 minutes)

We use a metadata service at the Belle experiment which provides a mechanism to locate files using descriptive information. However, at the Belle II experiment, we will have 50 _ 60 times more data than that of the Belle experiment. Therefore, it is expected that the existing metadata service has problems with performance, scalability, and durability, in particular, if it is extended to an event-level for searching metadata. To deal with this issue, we have designed a new metadata schema for Belle II which significantly reduces disk space for metadata, and proposed a new metadata service system which provides good performance and scalability based on Arda Metadata catalog for Grid Application. The control of the event-level metadata provides an efficient scheme of processing such as events with many tracks.

Keywords: High energy physics, Belle II, Large data handling, Metadata service, AMGA

Presenter: Dr KIM, Junghyun (KISTI)

Session Classification: Parallel: E1

Contribution ID: **28**

Type: **not specified**

Complex Network Analysis in Human Brain

Monday 20 February 2012 21:20 (20 minutes)

Presenter: KYEONG, Sunghyon (NIMS)

Session Classification: Parallel: E1

Contribution ID: 29

Type: **not specified**

Geant4 Research and Development for High Energy Physics and Medical Physics

Monday 20 February 2012 19:40 (20 minutes)

Geant4 is a toolkit for the simulation of the passage of particles through matter. Its areas of application include high energy, nuclear and accelerator physics, as well as studies in medical and space science. We introduce the project on Geant4 R&D for High Energy Physics and Medical Physics since a few accelerators are supposed to build for high energy physics and medical physics near future in Korea.

The goal is to port on supercomputing for High Energy Physics and Medical Physics and to profile large-scale test and evaluation in order to improve Geant4 multi-processing. For Geant4 development, we work on supercomputing porting, Geant4 parallel processing and Geant4 optimization R&D. For Geant4 application for High Energy Physics, we study on primary beam and secondary beam in accelerator. We also work on detector R&D. For Geant4 application for Medical Physics, we study proton accelerator for diagnosis and treatment. We also introduce the community building for Geant4 user group.

Presenter: Prof. CHO, Kihyeon (KISTI)

Session Classification: Parallel: E1

Contribution ID: **30**

Type: **not specified**

TBA

Tuesday 21 February 2012 19:00 (30 minutes)

Presenter: Prof. CHO, Jinho (Hanyang Univ.)

Session Classification: Parallel: S2

Contribution ID: 31

Type: **not specified**

Large N volume reduction and chiral random matrix theory

Tuesday 21 February 2012 19:30 (30 minutes)

Using the Eguchi-Kawai volume reduction, we study the large N limit of four dimensional Yang-Mills theory with two heavy adjoint fermions on a 2^4 lattice. For this numerical studies, we use overlap fermions for a number of colors up to $N=16$. We first confirm that the Z_{N^4} center symmetry of the reduced model is unbroken even at weak coupling regime. Then, in the chiral limit, $m_q=0$, we calculate the spectrum of the fermion Dirac operator and compare it with eigenvalue distributions of chiral random matrix theory.

Presenter: Dr LEE, Jong-Wan (KEK)**Session Classification:** Parallel: S2

Contribution ID: 32

Type: **not specified**

Low energy effective action of multiple D2-branes with Romans mass

Tuesday 21 February 2012 20:20 (30 minutes)

We obtain a new-type of $calN = 3$ Yang-Mills Chern-Simons theory from the Mukhi-Papageorgakis Higgsing of the $calN = 3$ Gaiotto-Tomasiello theory. This theory has $calN = 1$ BPS fuzzy funnel solution which is expressed in terms of the seven generators of $SU(3)$, excluding T_8 . We propose that this is an effective theory of multiple D2-branes with D6- and D8-branes in the presence of the Romans mass.

Presenter: Dr KWON, O-Kab (Sungkyunkwan U.)

Session Classification: Parallel: S2

Contribution ID: 33

Type: **not specified**

NEW Gravity and Its AdS/CFT Correspondence

Tuesday 21 February 2012 20:50 (20 minutes)

We explore four-dimensional Einstein-Weyl gravity and supergravity on anti-de Sitter spacetime. For a specific range of the coupling with appropriate boundary conditions, we show the effective equivalence of the theory with Einstein gravity and AdS supergravity at the quadratic Lagrangian level. Furthermore we show that these equivalences can be promoted to the full nonlinear level. We also show that the similar behavior holds for the generalized Gibbons-Hawking terms. From this we find that the correlation functions in the dual conformal field theory of Einstein-Weyl gravity and supergravity can be readily read off from corresponding ones from Einstein gravity and AdS supergravity. We also give comments on some issues in critical gravity and supergravity as well as conformal gravity and supergravity.

Presenter: Mr JANG, Wooje (Yonsei U.)**Session Classification:** Parallel: S2

Contribution ID: 34

Type: **not specified**

Invisible & semi-invisible decays from Belle

Tuesday 21 February 2012 19:00 (20 minutes)

B meson decays to invisible final states. e.g. $B \rightarrow \nu\bar{\nu}$ are very highly suppressed in the Standard Model (SM). Similarly, B decay to semi-invisible final states such as $B \rightarrow K^*\nu\bar{\nu}$ are highly suppressed. As a result, these decays can provide a good probe to search for new physics beyond the SM. Experimentally, it is very difficult to search for these decays due to invisibility of the final state particles. Making use of the event kinematics of the $Y(4S) \rightarrow BB$ decays. Belle has searched for these decays using the hadronic tagging method. We present these searches here.

Presenter: Prof. KWON, Youngjoon (Yonsei Univ.)

Session Classification: Parallel: E2

Contribution ID: 35

Type: **not specified**

A rare B meson decay study of $B^- \rightarrow \ell \nu$ with hadronic tagging at Belle

Tuesday 21 February 2012 19:20 (25 minutes)

The branching fraction of the rare B meson decay $B^- \rightarrow \ell \nu$ are expected to be very small due to helicity suppression in the Standard Model. With the contributions from the new physics beyond the Standard Model, this may be avoided and the evidences of the process may be observed. With hadronic tagging method for a very clean experimental signature, this study is based on a set of data sample of 711fb⁻¹ collected at the Y(4S) resonance energy, recorded by the Belle detector at the KEKB energy asymmetric e⁺e⁻ collider.

Presenter: Mr YOON, Youngmin (Yonsei Univ.)**Session Classification:** Parallel: E2

Contribution ID: 36

Type: **not specified**

A Study of $B \rightarrow l^+ \tau^-$ with hadronic tagging method at Belle experiment

Tuesday 21 February 2012 19:45 (25 minutes)

We present the study of the leptonic B-meson decay, $B \rightarrow l \tau$ from Belle experiment. This study is done by using MC sample which corresponds to an integrated luminosity of 711 fb^{-1} , from which contains approximately 771×10^6 BB pair events. They are tagged by hadronic tagging method. We optimized all event variables cuts to obtain best result. We can get the result of Expected Branching Fraction Upper Limits as a few times 10^{-5} . In this study, the systematic uncertainty is not considered.

Presenter: Mr JUNG, Dooyong (Yonsei U.)

Session Classification: Parallel: E2

Contribution ID: 37

Type: **not specified**

A New Architecture for Saving and Analyzing the HEP Data

Tuesday 21 February 2012 20:30 (20 minutes)

It, the collider of the high energy physics area, produces the huge amount of data. The data then should be dispersed over the world in high speed and in high capacity, for the purpose of analyzing the data by the scientists in the world. So they built and organized Tier system, a global scale infrastructure for transferring the data in hierarchical manners over the world. The scientists have to connect to the each final Tier system in their each country, and have to download and analyze the part of the data for their HEP researches. So, they need a storage system to keep the large amount of the data, and also need to run tools to analyze the data.

In this poster, we suggest a system that can provide a number of nodes for the use for saving and analyzing data. The system is a kind of cluster machine where the nodes can be shared by any number of users unless they need them simultaneously. The users can get assigned the nodes as many as they request, and they can keep the data in the nodes as long as they want to. The cluster system has programmable switches which can connect the nodes in any topology. This makes it possible to organize the nodes in star topology, in bus, in mesh, and so on. The users can request (1) the number of nodes, (2) the topology between them, (3) link bandwidth. The users can get full permission to use the nodes and this can give a great way to run their tools for analyzing. The data and any files, and even the last status of the environment they used, are managed, so they can continue their job very easily for the next visit.

This solution can perform the jobs which should be done at the scientists' terminal system for HEP researches. The system can give any number of the node by the request through web, and can give full permission of the node. The scientist can work the HEP researches well and efficiently with this solution. The scientists can do new challenges which were not tried due to the limitation of the system environment.

Presenter: Dr SEOK, Woojin (KISTI)**Session Classification:** Parallel: E2

Contribution ID: 38

Type: **not specified**

Bayesian Study of Ultra High Energy Cosmic Rays

Tuesday 21 February 2012 21:10 (20 minutes)

At present, we don't understand what can generate ultra high energy cosmic rays(UHECRs) exactly. Active galactic nuclei(AGN) can be regarded as one of the source of UHECRs. In this presentation, we use bayesian approach to determine the fraction of UHECRs coming from AGNs. And 27 highest energy-events detected by Pierre Auger Observatory(PAO) with Veron Cetty Veron(VCV) catalogue are analysed.

Presenter: Mr CHO, Wooram (Yonsei U.)**Session Classification:** Parallel: E2

Contribution ID: 39

Type: **not specified**

Study of simulated coincident events for COREA prototype system

Tuesday 21 February 2012 21:30 (20 minutes)

The COREA(COSmic ray Reaserch and Education Array) collaboration has installed a prototype array of plastic scintillation systems at Kyeonggibuk Science High School and Hansung Science High School to study cosmic ray events. In each site, three detector stations are installed, where each station consists of four scintillation detectors. We report the progress of simulation study of plastic scintillator system and efficiency measurement as well as current progress of estimating the primary energy of the cosmic ray showers measured by our system. In particular, we use air shower simulation package COSMOS. we assess the possibility of measuring the primary cosmic ray energy and direction

Presenter: Mr KIM, Hongki (Yonsei U.)**Session Classification:** Parallel: E2

Contribution ID: 40

Type: **not specified**

CP violation in the $B_s \rightarrow J/\psi (\mu^+ \mu^-) \phi (K^+ K^-)$ decay using TTT data set and combined DIM and TTT datasets

Tuesday 21 February 2012 20:50 (20 minutes)

I will show that Preliminary Results of Analysis of the CP violation in the $B_s \rightarrow J/\psi (\mu^+ \mu^-) \phi (K^+ K^-)$ decay using TTT data set and combined DIM and TTT datasets. This is one of the powerful channel for the study of CP violation at hadron colliders is the process $B_s \rightarrow J/\psi (\mu^+ \mu^-) \phi (K^+ K^-)$ with a clear kinematics and experimental signature. The CDF experiment has built the Hadronic Two Track (TTT) Trigger which is also relevant for the selection of this particular process. TTT could bring another sources of the experimental data useful for the analysis of CP violation in the process $B_s \rightarrow J/\psi (\mu^+ \mu^-) \phi (K^+ K^-)$ using combined TTT and DIM data analysis

Presenter: Dr KIM, Youngjin (KISTI)**Session Classification:** Parallel: E2

Contribution ID: 42

Type: **not specified**

Theoretical predication for J/psi polarization at QCD NLO at LHC.

Monday 20 February 2012 19:00 (20 minutes)

Presenter: Prof. WANG, Jianxiong (IHEP)

Session Classification: Parallel: P1

Contribution ID: 43

Type: **not specified**

Dipole-interacting Dark Matter

Monday 20 February 2012 21:40 (20 minutes)

Presenter: Dr HEO, Jae Ho (Yonsei Univ.)

Session Classification: Parallel: P1

Contribution ID: 44

Type: **not specified**

Squark flavor mixing and CP asymmetry of B meson

Monday 20 February 2012 20:40 (20 minutes)

The like-sign dimuon charge asymmetry observed by the D
O Collaboration indicates the CP violating contribution from new physics in the B_s meson mixing. Recently, the LHCb reported the observed CP-violating asymmetry in $B_s^0 \rightarrow J/\psi\phi$ and $B_s^0 \rightarrow J/\psi f_0(980)$, which is consistent with the SM prediction. However, there is still possible contribution on the CP violating new physics. The CKM fitter has presented the allowed region of the new physics parameters taking into account of LHCb data. We discuss the effect of the squark flavor mixing on the CP violation in the non-leptonic decays of B_d^0 and B_s^0 taking into account the data of LHCb experiment. We predict the asymmetries of $B_d^0 \rightarrow \phi K_S$, $B_d^0 \rightarrow \eta' K^0$ decays, $B_s^0 \rightarrow \phi\phi$ and $B_s^0 \rightarrow \phi\eta'$.

Presenter: YAMAMOTO, Kei (Niigata Univ.)**Session Classification:** Parallel: P1

Contribution ID: 45

Type: **not specified**

Measuring CKM4 at LHC

Monday 20 February 2012 19:40 (20 minutes)

We show that simultaneous precision measurements of the CP-violating phase in time-dependent $B_{\{s\}} \rightarrow J/\psi\phi$ study and the $B_{\{s\}} \rightarrow \mu^+\mu^-$ rate, together with measuring $m_{\{t\}}$ by direct search at the LHC, would determine $V_{\{tb\}}V_{\{t's\}}$ and therefore the quadrangle in the four-generation standard model. The forward-backward asymmetry in $B \rightarrow K\mu^+\mu^-$ provides further discrimination.

Presenter: Dr XU, Fanrong (National Taiwan U.)

Session Classification: Parallel: P1

Contribution ID: 46

Type: **not specified**

NLO contributions to the pole mass of gluino in minimal gauge mediation

Monday 20 February 2012 21:00 (20 minutes)

We compute the pole mass of the gluino in the minimal gauge mediation to two-loop order. The pole mass of the gluino begins to arise at one-loop order and the two-loop order correction shifts the leading order pole mass by 20% or even more. This shift is much larger than the expected accuracy of the mass determination at the LHC, and should be reckoned with for precision studies on the SUSY breaking parameters.

Presenter: Dr YOON, Yeo Woong (KIAS)**Session Classification:** Parallel: P1

Contribution ID: 47

Type: **not specified**

The B to K2 ll decay in PQCD and two NP senarios

Monday 20 February 2012 19:20 (20 minutes)

We analyze the $B \rightarrow K_2^*(\rightarrow K\pi)l^+l^-$ (with $l = e, \mu, \tau$) decay in the standard model and two new physics scenarios: vector-like quark model and family non-universal Z' model. We derive its differential angular distributions, using the recently calculated form factors in the perturbative QCD approach. Branching ratios, polarizations, forward-backward asymmetries and transversity amplitudes are predicted, from which we find a promising prospective to observe this channel in the future experiment. We update the constraints on effective Wilson coefficients and/or free parameters in these two new physics scenarios by making use of the $B \rightarrow K^*l^+l^-$ and $b \rightarrow sl^+l^-$ experimental data. Their impact on $B \rightarrow K_2^*l^+l^-$ is subsequently explored and in particular the zero-crossing point for the forward-backward asymmetry in these new physics scenarios can sizably deviate from the standard model.

Presenter: Dr RUN-HUI, Li (Yonsei Univ.)**Session Classification:** Parallel: P1

Contribution ID: 48

Type: **not specified**

Supersymmetric extensions of Nambu-Jona-Lasinio model

Monday 20 February 2012 21:20 (20 minutes)

We discuss the dynamical mass generation resulting from supersymmetric extensions of the classical Nambu-Jona-Lasinio model namely from interaction terms with four chiral superfields. The kind of interactions maybe considered a supersymmetric generalization of the four-fermion interactions of the classic Nambu-Jona-Lasinio model. We illustrate the dynamical generation of superfield Dirac mass including a supersymmetry breaking part through the analysis of the superfield gap equation derived using the super-graph technique. A dynamical symmetry breaking generally goes along with the dynamical mass generation, for which a bi-superfield condensate is responsible. We also discuss the nature of the bi-superfield condensate and its role of the effective Higgs superfield picture. We show also that a holomorphic quark superfield interaction term can successful account for the electroweak symmetry breaking with Higgs superfields as composites.

Presenter: Dr FAISEL, Gaber (National Central U.)

Session Classification: Parallel: P1

Contribution ID: 49

Type: **not specified**

Dipole-Interacting Dark Matter

Presenter: HEO, Jae Ho (Yonsei Univ.)

Contribution ID: 50

Type: **not specified**

RvMDM and lepton flavor violation

Tuesday 21 February 2012 19:25 (25 minutes)

A model relating radiative seesaw and minimal dark matter mass scales without beyond the standard model (SM) gauge symmetry (RvMDM) is constructed. In addition to the SM particles, the RvMDM contains, a Majorana fermion multiplet NR and scalar multiplet χ that transform respectively as $(1, 5, 0)$ and $(1, 6, -1/2)$ under the SM gauge group $\text{SU}(3)_C \times \text{SU}(2)_L \times \text{U}(1)_Y$. This choice for representation of the new multiplets is the minimal one that combining the minimal dark matter model and radiative seesaw mechanism successfully. The neutral component NR_0 plays the role of dark matter with a mass in the range of 9 to 10 TeV. This scale also sets the lower limit for the scale for the heavy degrees of freedom in NR and χ which generate light neutrino masses through the radiative seesaw mechanism. The model predicts an NR_0 -nucleus scattering cross section that would be accessible with future dark matter direct detection searches as well as observable effects in present and searches for charged lepton flavor violating processes, such as $\text{li} \rightarrow \text{lj } \gamma$ and $\mu - e$ conversion.

Presenter: TSAI, Lu-Hsing (National Taiwan U.)**Session Classification:** Parallel: P2

Contribution ID: 51

Type: **not specified**

Comment on Reparametrization Invariance of Quark-Lepton Complementarity

Tuesday 21 February 2012 21:25 (25 minutes)

We study the complementarity between quark and lepton mixing angles (QLC), the sum of an angle in quark mixing and the corresponding angle in lepton mixing is $\pi/4$. Experimentally in the standard PDG parametrization, two such relations exist approximately. These QLC relations are accidental which only manifest themselves in the PDG parametrization. We propose reparametrization invariant expressions for the complementarity relations in terms of the magnitude of the elements in the quark and lepton mixing matrices. In the exact QLC limit, it is found that $|V_{us}/V_{ud}| + |V_{e2}/V_{e1}| + |V_{us}/V_{ud}||V_{e2}/V_{e1}| = 1$ and $|V_{cb}/V_{tb}| + |V_{\mu 3}/V_{\tau 3}| + |V_{cb}/V_{tb}||V_{\mu 3}/V_{\tau 3}| = 1$. Expressions with deviations from exact complementarity are obtained. Implications of these relations are also discussed.

Presenter: LIN, Hsiu-Hsien (National Taiwan U.)

Session Classification: Parallel: P2

Contribution ID: 52

Type: **not specified**

A Split UED vector-like fourth generation contribution to the Higgs physics

We investigate the vector-like fourth generation coming from Split-UED to the contribution of the Higgs physics. We calculate the cross section from one-loop induced $gg \rightarrow H$ process, and the branching ratio from $H \rightarrow gg$ and $H \rightarrow \gamma\gamma$ processes. The work now is still in progress.

Presenter: MUSTOFA, Ardy (Yonsei Univ.)

Contribution ID: 53

Type: **not specified**

Neutrino masses and Leptogenesis in the 3-3-1 model with right-handed neutrinos

In the 3-3-1 model with right-handed neutrinos, small neutrino masses can be obtained by introducing a Higgs sextet. The neutrino mass is the result of a type II seesaw mechanism. In addition to the ordinary heavy right-handed neutrinos, there exists the scalar sextet coupled to leptons. We study the contributions of the right-handed neutrinos and the sextet to the lepton asymmetry.

Presenter: NGUYEN, Thi Thuy (Yonsei Univ.)

Contribution ID: 54

Type: **not specified**

Time variation of particle number in non-equilibrium quantum field theory

Tuesday 21 February 2012 20:35 (25 minutes)

We study the variation of particle number in non-equilibrium environment. Using the scalar model with the particle number violating interactions, we study the time development of the particle number using the Closed Path Time (CPT) formalism. Two types of the particle number interactions are considered. One is the particle number violating mass term and the other drives particle number production related to the decay of the heavy particle. The effect from particle number violating mass is included fully while the particle production interaction is treated perturbatively. We also discuss application to the method to more realistic models.

*The work is based on the collaboration with R. Hotta (Hiroshima U.) and H. Takata (Tomsk pedagogical U.)

Presenter: Prof. MOROZUMI, Takuya (Hiroshima Univ.)

Session Classification: Parallel: P2

Contribution ID: 55

Type: **not specified**

Neutrino and cosmic ray signals from the Moon

Tuesday 21 February 2012 19:50 (25 minutes)

We evaluate the ultra high energy neutrino event rate from the lunar observation using the analytic expression of the effective aperture by Gayley et al.. We modify this formalism for strong attenuation and evaluate the background from cosmic ray interaction in the lunar regolith. We also make modifications to the effective aperture for the non-standard model neutrino interaction and calculate the event rate with the enhanced non-SM neutrino-nucleon cross sections.

Presenter: Dr JEONG, Yu Seon (Yonsei Univ.)**Session Classification:** Parallel: P2

Contribution ID: 56

Type: **not specified**

Search for the 2nd KK states of the mUED model at the LHC

Tuesday 21 February 2012 21:00 (25 minutes)

Presenter: Prof. LEE, Kang Young (Konkuk Univ.)

Session Classification: Parallel: P2

Contribution ID: 57

Type: **not specified**

TBA

Tuesday 21 February 2012 21:50 (25 minutes)

Presenter: Dr PARK, Jubin (National Tsing Hua U.)

Session Classification: Parallel: P2

Contribution ID: 58

Type: **not specified**

Experimental CMB polarization measurement R&D

Tuesday 21 February 2012 10:10 (20 minutes)

Ever since the discovery of cosmic microwave background (CMB), the field of experimental cosmology is probing the earliest period of the universe. I discuss briefly importance of the polarization of CMB and discuss recent R&D for the measurement of B-mode CMB polarization.

Presenter: WON, Eunil (Korea University)

Session Classification: Plenary - Experimental

Contribution ID: 59

Type: **not specified**

Test of Code for Calculating K_{l3} Form Factor using Staggered Fermions

Wednesday 22 February 2012 17:00 (2 hours)

The kaon semileptonic decay (K_{l3}) form factor is important to test the first row unitarity of the CKM matrix. We calculate the form factor at zero momentum transfer using staggered fermions on the lattices. To confirm that the calculation code gives the correct result, we need have tests in the gauge invariance and a Ward identity. Gauge invariance test consists of generating random $SU(3)$ matrices, transforming the gauge links using them, and comparing the result with the original result. A Ward identity physically relates the vector current and the scalar density amplitudes. In the lattice data, we make sure that this identity is satisfied.

Presenter: Dr BAE, Taegil (KISTI)**Session Classification:** Poster Session

Contribution ID: 60

Type: **not specified**

ALICE Tier2 Activities in KISTI

Wednesday 22 February 2012 17:00 (2 hours)

The ALICE experiment, one of the four LHC experiments at CERN, is about studying the physics of strongly interacting matter at extreme energy densities, where the formation of a new phase of matter, the quark-gluon plasma, is expected. Several petabytes of data are expected to be produced from the ALICE detector annually. There are more than 1000 ALICE scientists around the world who want to work together to analyze the data. For this end, a hierarchically distributed computing model called ALICE Computing Grid has been developed and operated in production. Data from the ALICE experiment is distributed around the globe. According to the ALICE computing model, the data is supposed to be distributed to six large computer centers called ALICE Tier-1 centers, with a primary backup stored on tape at CERN where the first-pass reconstruction takes place, and with a secondary backup distributed across the Tier-1 centers where subsequent reconstructions and scheduled analysis happen. There are also about more than 60 small and medium sized computer centers called ALICE Tier-2 centers around the world mainly designed for MC productions and end-user analysis. KISTI has been part of the ALICE distributed computing Grid as a Tier-2 since 2006, providing a production-level grid service for the ALICE computing Grid. The KISTI ALICE Tier2 Center has promised to offer 50 Terabytes of disk space and 600 HS of computing capacity annually to the ALICE Grid according to the WLCG MoU signed with CERN in 2007. We will give an updated report on ALICE Tier2 relating activities that have been around at KISTI last year including the total amount of CPU delivery for 2011.

As part of KISTI ALICE Tier-2 activities, we have been participating in the development of PROOF (Parallel ROOT Facility), which is developed to enable interactive parallel analysis on a local cluster. PROOF is adopted mainly by the ALICE community for faster data analysis with the expectation of resulting in much shorter turnaround time in data analysis cycle. We have developed a PROOF benchmark module called ProofBench that was successfully released as part of the ROOT v5.30/00 in June 2011. This talk will also update our work on the PROOF benchmark development in collaboration with CERN.

Presenters: Dr RYU, Sangsu (KISTI); Dr HWANG, Soonwook (KISTI)

Session Classification: Poster Session

Contribution ID: 61

Type: **not specified**

QoS Networking for LHC data transferring

Wednesday 22 February 2012 17:00 (2 hours)

In this paper, we shows research works of the NRM (Network Resource Management) system for efficient transmission of large-scale of data for HEP (High Energy Physics) as a user requirement based in international advanced scientific and technology research network and also announce the demonstrated about them.

Each national research network of each countries consisting of 40 Giga network facilities which are based on optical technologies and also has each own NRM systems. And 100 Giga networks are planning to build in the future. Therefore, NRM systems and technology is very important to efficient use of network resources and support of advanced scientific research areas.

Stable transmission of large-scale of data is a complex and difficult problems, even though service provider's support for QoS techniques and etc. Furthermore, due to the expansion of international multi-domain environment, the performance of network-related guarantees is more complicated. So transmission bandwidth and performance guarantees (QoS), transfer status monitoring and control technologies are more needed. Because of these issues, the study is expected to decrease in efficiency. And research leads to reduced productivity.

Thus, through the NRM system is more efficient for large-scale data transfers between Tier centers for especially reservation of network resources on user-based (scheduled time, bandwidth, monitoring, and provisioning). It can be provided as a QoS for domestic and international. And more easy control and access to global high performance network resources

Internationally, most of countries have worked on the standard for interworking over the national research networks and as well connection optical network between each countries. as a result, developed NSI (Network Service Interface) framework and CS (Connection Service) Protocol. It have been independently implemented in software by several countries and also can be connected between US, EU, Japan and Korea based on NRM techniques.

International connectivity of the NRM based networks has been 15 networks of the worldwide by the end of 2011. At SC11, demonstrated the OGF-NSI architecture for standardized global inter-domain provisioning of high performance network connections through connections of 15 international advanced networks and 12 places in the world

Presenter: Dr MOON, Jeonghoon (KISTI)

Session Classification: Poster Session

Contribution ID: 62

Type: **not specified**

Right-handed current contributions in $B \rightarrow K \pi$ decays

Wednesday 22 February 2012 17:00 (2 hours)

The current measurements of CP asymmetries in $B \rightarrow K \pi$ decays are in disagreement with the predictions of the Standard Model. In order to solve this discrepancy, using the effective Hamiltonian approach, we investigate the right-handed current contributions to $B \rightarrow K \pi$ decay amplitudes including all possible low-energy operators in the nonmanifest left-right model. We find the allowed region of new physics parameters satisfying the current experimental data, and discuss its implication to other observables such as B_s mixing and the branching fraction for $B \rightarrow \tau \nu$ decays.

Presenters: Prof. CHO, Kihyeon (KISTI); Dr NAM, Soohyeon (KISTI)

Session Classification: Poster Session

Contribution ID: 63

Type: **not specified**

Higgs-induced lepton flavor violation

Monday 20 February 2012 20:00 (20 minutes)

Due to the smallness of the lepton Yukawa couplings, higher-dimensional operators can give a significant contribution to the lepton masses. In this case, the lepton mass matrix and the matrix of lepton-Higgs couplings are misaligned leading to lepton flavor violation (LFV) mediated by the Standard Model Higgs boson. We derive model-independent bounds on the Higgs flavor violating couplings and quantify LFV in decays of leptons and electric dipole moments for a class of lepton-Higgs operators contributing to lepton masses. We find significant Higgs-mediated LFV effects at both 1-loop and 2-loop levels.

Presenter: Dr PARK, Jae-hyeon (IKTP, TU Dresden)

Session Classification: Parallel: P1

Contribution ID: 64

Type: **not specified**

eta_c mixing effects on charmonium and B meson decays

Tuesday 21 February 2012 19:00 (25 minutes)

We include the η_c meson into the η - η' - G mixing formalism constructed in our previous work, where G represents the pseudoscalar gluball. The mixing angles in this tetramixing matrix are constrained by theoretical and experimental implications from relevant hadronic processes. Especially, the angle between η_c and G is found to be about 15° from the measured decay width of the η_c meson. The pseudoscalar glueball mass m_G , and the pseudoscalar densities $m_{qq,ss,cc}$ and the $U(1)$ anomaly matrix elements associated with the mixed states are solved from the anomalous Ward identities. The solution $m_G \approx 1.4$ GeV obtained from the η - η' - G mixing is confirmed, while m_{qq} grows to above the pion mass, and thus increases perturbative QCD (PQCD) predictions for the branching ratios $Br(B \rightarrow \eta' K)$. We then analyze the η_c -mixing effects on charmonium magnetic dipole transitions, and on the $B \rightarrow \eta^{(\prime)} K_S$ branching ratios and CP asymmetries, which further improve the consistency between theoretical predictions and data. A predominant observation is that the η_c mixing enhances the PQCD predictions for $Br(B \rightarrow \eta' K)$ by 20%, but does not alter those for $Br(B \rightarrow \eta K)$. The puzzle due to the large $Br(B \rightarrow \eta' K)$ data is then resolved.

Presenter: Prof. LI, Hsiang-nan (Academia Sinica)

Session Classification: Parallel: P2

Contribution ID: 65

Type: **not specified**

Neutrino masses and Leptogenesis in the 3-3-1 model with right-handed neutrinos

Wednesday 22 February 2012 17:00 (2 hours)

In the 3-3-1 model with right-handed neutrinos, small neutrino masses can be obtained by introducing a Higgs sextet. The neutrino mass is the result of a type II seesaw mechanism. In addition to the ordinary heavy right-handed neutrinos, there exists the scalar sextet coupled to leptons. We study the contributions of the right-handed neutrinos and the sextet to the lepton asymmetry.

Presenter: NGUYEN, Thi Thuy (Yonsei Univ.)

Session Classification: Poster Session

Contribution ID: 66

Type: **not specified**

A Split UED vector-like fourth generation contribution to the Higgs physics

Wednesday 22 February 2012 17:00 (2 hours)

We investigate the vector-like fourth generation coming from Split-UED to the contribution of the Higgs physics. We calculate the cross section from one-loop induced $gg \rightarrow H$ process, and the branching ratio from $H \rightarrow gg$ and $H \rightarrow \gamma\gamma$ processes. The work now is still in progress.

Presenter: MUSTOFA, Ardy (Yonsei Univ.)

Session Classification: Poster Session

Contribution ID: 67

Type: **not specified**

Charmless B $\rightarrow$ V T decays in perturbative QCD approach

Wednesday 22 February 2012 17:00 (2 hours)

The B $\rightarrow$ V T (V and T denote vector and tensor mesons respectively) decays, whose final-state particles can have transverse or longitudinal polarization, are investigated in perturbative QCD (pQCD) approach. Measurements have been made of B $\rightarrow$ ϕ K₂^{*}, and it is found that f_T/f_L is small, whereas $f_T/f_L \sim 1$ for B $\rightarrow$ ω K₂^{*} where $f_T(f_L)$ is the fraction of transverse (longitudinal) decays. It will be of great interest to measure f_L for these modes to test pQCD.

Presenter: SIMANJUNTAK, Freddy (Yonsei University)

Session Classification: Poster Session