External Review Schedule

February 2014

Center for Computational Sciences
University of Tsukuba

External Review on Center for Computational Sciences, University of Tsukuba

Date: February 18, 19, 20, 2014
Place: Center for Computational Sciences, University of Tsukuba
(http://www.ccs.tsukuba.ac.jp)

External Review Committee:

- Jeffery Vetter (Chair)   Computer Science   Professor
  Computer Science and Mathematics Division
  Oak Ridge National Laboratory, USA

- Shinji Tsuneyuki （Vice Chair)   Material Science   Professor
  School of Science, The University of Tokyo, Japan

- Karl Jansen   Particle Physics   Professor
  John von Neumann Institut fur Computing (NIC), Germany

- Andreas Burkert   Astrophysics   Professor
  Theoretical and Computational Astrophysics,
  University Observatory, Munich Germany

- James Vary   Nuclear Physics   Professor
  International Institute of Theoretical and Applied Physics,
  Iowa State University, USA

- Joachim Burgdörfer   Material Science   Professor
  Vienna University of Technology, Austria

- Andrew Roger   Biological Science   Professor
  Department of Biochemistry and Molecular Biology, Faculty of Medicine,
  Dalhousie University, Halifax, Nova Scotia, Canada

- Jack Wells   Computational Science   Professor, Director of Science
  National Center for Computational Science
  Oak Ridge National Laboratory, USA

- Takemasa Miyoshi   Geoscience   Professor
  Data Assimilation Research Team
  RIKEN Advanced Institute for Computational Science, Japan

- Hiroshi Nakashima   Computer Science   Professor
  Academic Center for Computing and Media Studies,
  Kyoto University, Japan

- Xiaofang Zhou   Computational Informatics Professor
  University of Queensland, Australia

Program

18th February (Tuesday)

8:40 Shuttle bus for CCS from Okura Frontier Hotel Tsukuba

<u>Overview of CCS</u> (**Workshop Room**)

9:00-10:00 Welcome & Overview of CCS (M. Umemura, Director of CCS)
10:00-10:30 Activities and Results 2008-2013 (M. Sato, ex-Director of CCS)

10:30-10:45 Coffee Break

10:45-11:45 T2K-Tsukuba & HA-PACS Projects (T. Boku, Deputy Director of CCS)
11:45-12:10 Tour to HA-PACS

12:10-13:10 Lunch

13:10-13:30 ILDG/JLDG Project (T. Yoshie)

<u>Activities & Collaborations of Divisions</u> (**Workshop Room**)

13:30-14:00 Division of Particle Physics: Particle Physics Group
　　　　　(Y. Kuramashi)
14:00-14:30 Division of Global Environmental Science: Atmospheric Science Group
　　　　　(H. Tanaka)

14:30-14:45 Coffee Break

14:45-15:15 Division of Astrophysics and Nuclear Physics: Nuclear Physics Group
　　　　　(K. Yabana, T. Nakatsukasa)
15:15-15:45 Division of Astrophysics and Nuclear Physics: Astrophysics Group
　　　　　(M. Mori)
15:45-16:15 Division of Quantum Condensed Matter Physics
　　　　　(K. Yabana)

16:15-16:30 Coffee Break

16:30-17:00 Multidisciplinary Cooperative Research (K. Yabana)
17:00-17:30 Bureau of Public Relations (T. Yoshito)

18:00 Shuttle bus for Okura Frontier Hotel Tsukuba

19th February (Wednesday)

8:40 Shuttle bus for CCS from Okura Frontier Hotel Tsukuba

<u>Activities & Collaborations of Divisions (cont'd)</u> (**Workshop Room**)

9:00-9:30 Division of High Performance Computing Systems: High Performance Computing Systems Group (T. Boku)

9:30-10:00 Division of Computational Informatics: Database Group (H. Kitagawa)

10:00-10:30 Division of Computational Informatics: Computational Media Group (Y. Kameda)

10:30-10:45 Coffee Break

10:45-11:15 Division of Life Sciences: Molecular Evolution Group (T. Hashimoto)

11:15-11:45 Division of Life Sciences: Biological Function and Information Group (K. Shiraishi, Y. Shigeta)

11:45-13:00 Lunch

12:45 Meeting Photo @Workshop Room

<u>Parallel Tracks for Divisions</u>

13:00-17:30

✧ Division of Particle Physics
    Reviewer: Karl Jansen   Room:D410,D411 (Physics)

✧ Division of Astrophysics and Nuclear Physics: Astrophysics Group
    Reviewer: Andreas Burkert   Room: room A (CCS)

✧ Division of Astrophysics and Nuclear Physics: Nuclear Physics Group
    Reviewer: James Vary   Room: D412 (Physics)

✧ Division of Quantum Condensed Matter Physics
    Reviewer: Joachim Burgdörfer, Shinji Tsuneyuki   Room: D201 (Physics)

✧ Division of Life Sciences
    Reviewer: Andrew Roger   Room: room B (CCS)

✧ Division of Global Environmental Science
    Reviewer: Jack Wells, Takemasa Miyoshi   Room: room C (CCS)

✧ Division of High Performance Computing Systems
    Reviewer: Jeffery Vetter, Hiroshi Nakashima   Room: SB911-1 (SysInfo)

✧ Division of Computational Informatics
    Reviewer: Xiaofang Zhou   Room: SB911-2 (SysInfo)

18:00- Committee Meeting with Dinner (A bus departs from CCS.)

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20th February (Thursday)

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8:40 Shuttle bus for CCS from Okura Frontier Hotel Tsukuba

<u>Future Plans</u> (**Workshop Room**)

9:00-9:30 The Strategy of CCS (M. Umemura)
9:30-10:00 COMA (PACS IX) Project (T. Boku)
10:00-10:30 JCAHPC Project (M. Sato)

10:30-10:45 Coffee Break

10:45-11:15 Feasibility Study toward Exa-scale Computing (M. Sato)
11:15-11:35 Joint Institute for Computational Fundamental Science (JICFuS)
      (Y. Kuramashi)
11:35-11:55 Organization for Collaborative Research on
       Computational Astrobiology (CAB) (M. Umemura)

11:55-13:00 Lunch

<u>Committee Meeting</u> (**Workshop Room**)

13:00-14:00 Committee Meeting
14:00-15:00 Discussion, Q & A
15:00-16:00 Committee Meeting

17:00 Shuttle bus for Okura Frontier Hotel Tsukuba

<u>Parallel Tracks for Divisions</u>

Division of Particle Physics

Reviewer: Karl Jansen

Room:D410,D411 (Physics)

19th February (Wednesday)

13:00-14:00	”PACS-CS project and HPCI Strategic Field Program”, Y.Kuramashi
14:00-14:40	” Resonances in Lattice QCD”, N.Ishizuka
14:40-15:00	Break
15:00-15:40	” Nonperturbative Renormalization in SF Scheme”, Y.Taniguchi
15:40-16:20	” Baryon-Baryon Potential in Lattice QCD”, N.Ishii
16:20-17:00	” QCD at Finite Temperature and Finite Density”, K.Kanaya

Division of Astrophysics and Nuclear Physics: Astrophysics Group

Reviewer: Andreas Burkert

Room: room A (CCS)

19th February (Wednesday)

13:00-13:30	Umemura: Novel challenges of radiation physics – general relativistic & quantum-mechanical
13:30-14:00	Hasegawa: RHD simulations on the formation of galaxies during the Epoch of Reionization
14:00-14:30	Namekata: Evolution of gas clouds exposed to AGN radiation
14:30-14:40	Break
14:40-15:10	Wagner: AGN feedback by relativistic jets and fast disc winds
15:10-15:40	Mori: Recent our studies of galaxy evolution
15:40-16:00	Miki: Hunting a Wandering Supermassive Black Hole in M31 Halo
16:00-16:10	Break
16:10-16:30	Ogiya: Solving the Core-Cusp Problem of CDM Halos and the Origin of their Observational Laws
16:30-17:00	Yoshikawa: Vlasov-Poisson simulation and its application to neutrinos in the large-scale structure in the universe
17:00-17:30	Ishiyama: Supercomputer Simulations of Structure Formation in the Universe

Division of Astrophysics and Nuclear Physics: Nuclear Physics Group

Reviewer: James Vary

Room: D412 (Physics)

19th February (Wednesday)

13:00-13:40   T. Nakatsukasa "Nuclear response and dynmaics in TDDFT"
13:40-14:00   Y. Hashimoto "TDHFB calculations with Gogny interaction"
14:00-14:30   J. Terasaki "Calculation of nuclear transition matrix elements of neutrinoless double-beta decay"
14:30-14:50   Y. Hashimoto "Tilted axis rotations in osmium 182Os"

14:50-15:10   Break

15:10-15:30   K. Yabana "Imaginary-time theory for triple alpha reaction rate"
15:30-16:00   K. Yabana "Real-time TDDFT in condensed matter physics"
16:00-16:20   K. Sekizawa "Multi-nucleon transfer reaction by TDHF"
16:20-16:40   T. Nakatsukasa "Configuration mixing approach for clustering in light nuclei"

16:40-17:10   Discussion

Division of Quantum Condensed Matter Physics

Reviewer: Joachim Burgdörfer, Shinji Tsuneyuki

Room: D201 (Physics)

19th February (Wednesday)

13:00-13:10   K. Yabana "Introduction of Division of Quantum Condensed Matter Systems"

13:10-13:40   X.M. Tong "Time-dependent method in laser material interactions"

13:40-14:10   K. Yabana "Time-dendent density fucntional theory for optical sciences"

14:10-14:40   N. Maeshima "Photoinduced phase transition and exciton Fano resonance"

14:40-15:10   H. Koizumi "Mechanism of cuprate superconductivity"

15:10-15:30   Break

15:30-16:00   K. Shiraishi "Large-scale first principles calculations of future nano devices"

16:00-16:30   S. Okada "First-principles studies on Nano-carbon materials"

16:30-17:00   Discussions

Division of Life Sciences

Reviewer: Andrew Roger

Room: room B (CCS)

19th February (Wednesday)

[Biological Function and Information Group]
13:00-13:30   Mitsuo Shoji: Computational bioscience with supercomputers
13:30-14:00   Megumi Kayanuma: QM/MM study of biocatalyst
14:00-14:30   Yasuteru Shigeta: Computational studies on reaction mechanisms of nylon-oligomer hydrolase

(Break 15 min.)

[Molecular Evolution Group]
14:45-15:15   Sohta Ishikawa: Acceleration of large-scale phylogenetic analyses with non-homogeneous substitution models: implementation and performance evaluation on T2K-Tsukuba super-cluster system
15:15-15:45   Yuji Inagaki: Large-scale phylogenetic analyses elucidate the evolutionary affiliations of two novel microbial eukaryotes, Tsukubamonas globosa and Palpitomonas bilix

[General discussion] 15:45-16:15

Division of Global Environmental Science

Reviewer: Jack Wells, Takemasa Miyoshi

Room: room C (CCS)

19th February (Wednesday)

13:00-13:30   Geoscience Division overview for global scale
(Hiroshi L. Tanaka, Professor of CCS)

13:30-14:00   Geoscience Division overview for regional scale
(Hiroyuki Kusaka, Associate Professor of CCS)

14:00-14:20   Energy spectrum of global atmosphere
(Koji Terasaki, Research assistant of RIKEN)

14:20-14:40   Meso-scale convection system and its prediction
(Yasutaka, Wakazuki, Assistant Professor in campus)

14:40-15:00   Break

15:00-15:20   Climate in future, present, and past
(Hiroaki Ueda, Professor in campus)

15:20-15:40   Presentation of research activities
(Ryosaku Ikeda, Research assistant of CCS)

15:40-16:00   Presentation of research activities
(Keiichi Kondo, Graduate Student of CCS)

16:00-16:20   Presentation of research activities
(Takuro Aizawa, Graduate Student of CCS)

16:20-16:40   Presentation of research activities
(Akio Yamagami, Graduate Student of CCS)

16:40-17:00   Presentation of research activities
(Doan Quan Van, Graduate Student of CCS)

17:00-17:30   Discussion on research activities

Division of High Performance Computing Systems

Reviewer: Jeffery Vetter, Hiroshi Nakashima

Room: SB911-1 (SysInfo)

19th February (Wednesday)

13:00-13:30   "Parallel Language XcalableMP" by Mitsuhisa Sato
13:30-14:00   "Large Scala & Wide Area Distributed File System, Gfarm" by Osamu Tatebe
14:00-14:30   "Tightly Coupled Accelerators Architecture" by Yuetsu Kodama

14:30-15:00   BREAK

15:00-15:30   "FFT and Parallel Numerical Libraries" by Daisuke Takahashi
15:30-16:00   "High Performance Numerical Algorithm" by Hiroto Tadano
16:00-16:30   "CPU/GPU Work Sharing and Collaboration with Domain Sciences" by Taisuke Boku

16:30-17:00   Open Discussion

* Each time slot consists of 25 min. talk and 5 min. discussion.

Division of Computational Informatics

Reviewer: Xiaofang Zhou

Room: SB911-2 (SysInfo)

19th February (Wednesday)

13:00-14:30   Database Group Presentation and QA

14:30-15:00   Database Group Lab Tour(At SB922)
- Stream Processing
- XML Facet Query
- Twitter Data Analysis

15:00-15:30   Break

15:30-16:15   Computational Media Group Lab Tour (At 3D318 and Parking lot)
- Free viewpoint browser
- Othello
- Facial Enhancement Emotion
- See-Through on Driver View (at Parking Lot)
- Walker Navigation

16:15-17:30   Computational Media Group Presentation and QA