Center for Research on Innovative Simulation Software

[Research and Development of Large-Scale Simulation used in Industry]

http://www.ciss.iis.u-tokyo.ac.jp

Aiming Innovation in MO-NO-DU-KU-RI

High performance simulation software drastically changes engineering

Center for Research on Innovative Simulation Software (CISS) was found to conduct R&D on the advanced and practical computational science simulation software utilizing hyper-large-scale simulations represented by "Kei" for the next hyper-simulation era. We aim at

- Conducting world-leading advanced research on hyper-large-scale simulation software
- Strengthening the educational foundation to educate how to make and use hyper-simulation software for industrial application
- Putting R&D results in common industrial use to enhance global competitiveness of domestic engineering

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Center Vice Director: YOSHIKAWA, Nobuhiro, *Professor*

HAMBA, Fujihiro, *Professor**

OSHIMA, Marie, *Professor**

SATO, Fumitoshi, *Professor*

MIZOGUCHI, Teruyasu, *Professor**

OOKA, Ryozo, *Professor**

ONO, Kenji, *Visiting Prof.*

UMENO, Yoshitaka, *Associate Prof.*

HASEGAWA, Yosuke, *Associate Prof.*

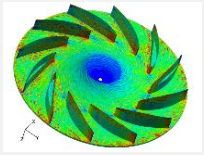
NAGAI, Kohei, *Associate Prof.**

MORITA, Naoki, *Assistant Prof.*

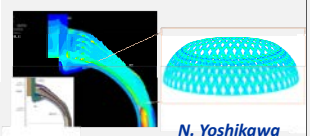
* Cooperating Member

Introduction of the Research

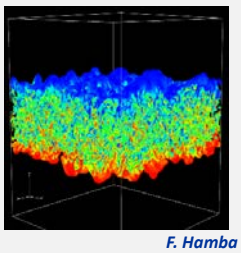
Manufacturing



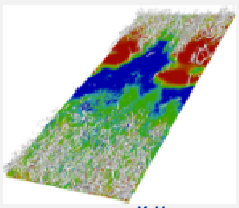
C. Kato
Absolute vorticity in a centrifugal blower



N. Yoshikawa
Developing hydrogen tank by multiple filament winding method supported by meso-scale simulation

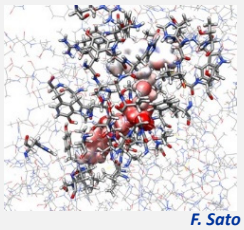


F. Hamba
Contours of kinetic energy of turbulent diffusion in rotating system. Red denotes right-handed helical motion and blue denotes left-handed helical motion.



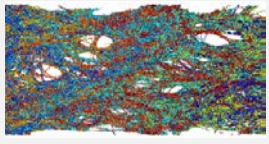
Y. Hasegawa
Instantaneous turbulent flow over a flat plate under optimal control for heat transfer enhancement and friction drag suppression.

Design of Molecular and Nanoscale Materials and Devices



F. Sato
Electrostatic potential on the flavin adenine dinucleotide in glucose oxidase

T. Mizoguchi
Wave function at the bottom of the conduction band of MgO at (top) ground state, (middle) core-hole state at Mg2p orbital, and (bottom) core-hole state at Mg1s orbital

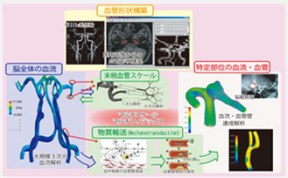


Y. Umeno
Deformation of Polycarbonate by Coarse-Grained Particle Model Simulation

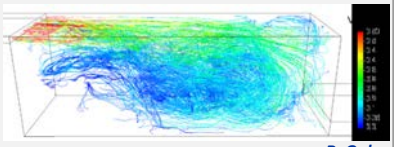
Large-Scale Data Analysis

K. Ono
Web-based workflow system WHEEL

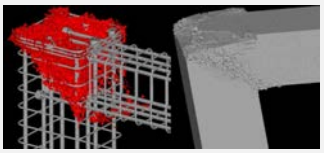
Medical engineering and Environmental Building Science



M. Oshima
Schematic of integrated simulation system "M-SPhyR Circulation" (Multi-scale and physics simulator for circulation)



R. Ooka
Analyses of flowfield in and around building using Lattice Boltzmann Method



K. Nagai
Failure of RC beam-column joint by RBSM

Major National Project being Promoted by CISS

Leading Institute

Priority Issue ⑧ on Post-K Computer (2014-2019):
Development of Innovative Design and Production Processes that Would Lead the Way for the Manufacturing Industry in the Near Future

- Overview: Research and develop innovative design techniques, new manufacturing processes that minimize costs, and ultrahigh-speed integration simulations, which will form the core of these efforts, to achieve high value-added product development
- Responsible organization: The Univ. of Tokyo; Kobe Univ.; Tohoku Univ.; Yamanashi Univ.; Kyushu Univ.; Tokyo Univ. of Sci.; JAXA; RIKEN