Joint Usage/Research Center for Interdisciplinary Large-scale Information Infrastructures 2019-2020 Joint Research Projects I

2019-2020 Joint Research Projects: 58 Projects (92 joint research centers)※
International 4, General 54
※ 34 Exploratory Joint Research Projects are adopted as well. (As of May 2019)

HPCI-JHPCN projects are marked with *
(NA) : Very large-scale numerical computation (DA) : Very large-scale data processing
(NW) : Very large capacity network technology (IS) : Very large-scale information systems

International Joint Research Projects

Project Title	Leader (Affiliation)	Category	Joint Research Center
* Innovative Multigrid Methods	Kengo Nakajima (The University of Tokyo)	NA	Hokkaido, UTokyo, Kyushu
* Hierarchical low-rank approximation methods on distributed memory and GPUs	Rio Yokota (Tokyo Institute of Technology)	NA	Hokkaido, UTokyo, Tokyo Tech, Kyoto, Kyushu
* Modernizing and accelerating fusion plasma turbulence codes targeting exa-scale systems	Yuuichi Asahi (National Institutes for Quantum and Radiological Science and Technology)	NA	Tokyo Tech, Nagoya
* Development of Fast Surrogate for Approximating Large-scale 3D Blood Flow Simulation	Takashi Shimokawabe (The University of Tokyo)	NA DA	UTokyo

General Joint Research Projects(1/2)

Project Title	Leader (Affiliation)	Category	Joint Research Center
Dynamics of the finite temperature QCD	Hiroshi Suzuki (Kyushu University)	NA	Osaka, Kyushu
Whole-volume gyrokinetic simulation of magnetic fusion plasmas with in-situ data processing	Toseo Moritaka (National Institute for Fusion Science)	NA DA	Tokyo Tech
* Combination of HPC and high-speed data transfer technologies for big-data processing systems	Takeshi Murata (National Institute of Information and Communications Technology)	DA IS	Tohoku, Nagoya, Kyoto, Kyushu
Development of high-performance parallel code for LES of MHD turbulence	Hideaki Miura (National Institute for Fusion Science)	NA	UTokyo
* Development of massively parallelized particle simulation code for fusion plasma research and visualization of the simulation results	Hiroaki Ohtani (National Institute for Fusion Science)	NA	Nagoya, Kyoto
* Development and Application of Risk Evaluation for Heat Stroke	Akimasa Hirata (Nagoya Institute of Technology)	NA	Tohoku
* Large-scale aeroacoustic simulation on wind instruments	Kin'ya Takahashi (Kyushu Institute of Technology)	NA DA	Kyushu
Constructions of fundamental theory in particle methods and their expansion to multiphysics simulator	Masao Ogino (Daido University)	NA	Nagoya, Kyushu
* High accuracy simulation for flood damage estimation in Japan	So Kazama (Tohoku University)	NA	Tohoku
Developing Accuracy Assured High Performance Numerical Libraries for Eigenproblems	Takahiro Katagiri (Nagoya University)	NA	UTokyo, Nagoya, Kyushu
Study on Massively-parallelized Plasma Particle Simulation Method	Yohei Miyake (Kobe University)	NA	Hokkaido, Kyoto
* Interaction between turbulence mixing and ensemble of micro-particles with internal degrees of freedom	Toshiyuki Gotoh (Nagoya Institute of Technology)	NA	Nagoya
Networked Materials Informatics based on Absolute Energy Estimation by All-electron Mixed-basis *Ab initio* Computer Simulation	Yoshiyuki Kawazoe (Tohoku University)	NA	Kyushu
Study of the origin of the elements by massively parallel simulation for white dwarf explosions	Ataru Tanikawa (The University of Tokyo)	NA	UTokyo
High performance simulations using FreeFem++ on mixed distributed-plus shared-memory architecture	Atsushi Suzuki (Osaka University)	NA	Osaka
* Development and Scalability Evaluation of Distributed Deep Learning Framework for Extremely Large Neural Networks	Masahiro Tanaka (National Institute of Information and Communications Technology)	IS	UTokyo
* Large-scale phase-field simulations for grain growth with anisotropic grain boundary properties	Tomohiro Takaki (Kyoto Institute of Technology)	NA	Tokyo Tech
* Isogeometric analysis for defects in crystalline lattice	Ryuichi Tarumi (Osaka University)	NA	Nagoya, Osaka
* Developing Monte Carlo codes available for high-density 2-color QCD as a way to determine the phase diagram	Kei Iida (Kochi University)	NA	Kyoto, Osaka
* Optimization of real-time tsunami inundation simulation for modern supercomputer systems	Akihiro Musa (Tohoku University)	NA	Tohoku, Osaka
Investigation of Sound-Flow Interaction of Acoustic Liner using CFD/CAA Hybrid Approach	Daisuke Sasaki (Kanazawa Institute of Technology)	NA	Tohoku
* Droplet motion through porous media by pressure-evolution lattice Boltzmann method	Masayuki Kaneda (Osaka Prefecture University)	NA	Tokyo Tech
Detailed numerical analyses of early Universe in lattice QCD numerical simulations	Masakiyo Kitazawa (Osaka University)	NA	Osaka
* Large scale simulation on gaseous detonation with droplets	Akiko Matsuo (Keio University)	NA	Tohoku

Joint Usage/Research Center for Interdisciplinary Large-scale Information Infrastructures 2019-2020 Joint Research Projects II

2019-2020 Joint Research Projects: 58 Projects (92 joint research centers)※
International 4, General 54
※ 34 Exploratory Joint Research Projects are adopted as well. (As of May 2019)

HPCI-JHPCN projects are marked with *

NA : Very large-scale numerical computation   **DA** : Very large-scale data processing
NW : Very large capacity network technology   **IS** : Very large-scale information systems

General Joint Research Projects (2/2)

Project Title	Leader (Affiliation)	Category	Joint Research Center
Efficient algorithms for the shortest vector problem using massive parallel computing	Tadanori Teruya (National Institute of Advanced Industrial Science and Technology)	NA	UTokyo
* The PGAS System with High Performance and High Productivity for Multi-Core/Multi-Node Processing	Hiroko Midorikawa (Seikei University)	IS	Tokyo Tech, Kyushu
Physiologically realistic study of subcellular calcium dynamics with nanometer resolution	Kengo Nakajima (The University of Tokyo)	NA DA	UTokyo
* Numerical Methods with High-Performance, Trans Precision and High Reliability	Kengo Nakajima (The University of Tokyo)	NA	Hokkaido, UTokyo, Tokyo Tech, Nagoya, Kyushu
* Toward extreme-scale parallel computation of three-dimensional incompressible homogeneous turbulence	Naoya Okamoto (Aichi Institute of Technology)	NA	Nagoya
* High performance flow simulations of unclarified slope disasters using different numerical methods	Shuji Moriguchi (Tohoku University)	NA	Kyoto
* Development of efficient boundary integral equation method and application to gigantic earthquake simulations	Ryosuke Ando (The University of Tokyo)	NA	UTokyo
* Study of computer-assisted detection of lesions in medical images using Deep Learning	Issei Sato (The University of Tokyo)	DA	UTokyo
* Mechanism for meson mass generation in lattice QCD with chiral fermion	Motoo Sekiguchi (Kokushikan University)	NA	Osaka
* Development of the ensemble-based plume prediction system	Naoyuki Onodera (Japan Atomic Energy Agency)	NA	Tokyo Tech
* GPU implementation of the AMR-based thermal flow simulation code in nuclear reactors	Naoyuki Onodera (Japan Atomic Energy Agency)	NA	Tokyo Tech
* Study of phase structure at finite density QCD with GPU code and multiple precision algorithm	Masayuki Wakayama (Osaka University)	NA	Osaka
* A Fully-explicit Computation for Incompressible Gas-liquid Two-phase Flows with Mesh Refinement Adapting to Interfaces and Implementation on a GPU Supercomputer–Application to Liquid Film and Foam–	Takayuki Aoki (Tokyo Institute of Technology)	NA	Kyushu
Development of large-scale genome data analysis and implementation	Katsushi Tokunaga (National Center for Global Health and Medicine)	DA	UTokyo
* Synthetic Populations for Real-Scale Social Simulations and Their Applications	Tadahiko Murata (Kansai University)	NA DA	Hokkaido, Osaka
Investigation of formation and evolution history of galaxies by high-precision and high-resolution simulations	Yohei Miki (The University of Tokyo)	NA	UTokyo, Tokyo Tech
* Development of AI for automatic ship handling toward the innovation of marine transportation	Hirotada Hashimoto (Kobe University)	NA	Tokyo Tech
* Enhancement of the *GW* space-time code for treatment of organic-metal interfaces	Susumu Yanagisawa (University of the Ryukyus)	NA	Tohoku
Study of energy-momentum tensor at physical quark mass	Yusuke Taniguchi (University of Tsukuba)	NA	Hokkaido, Osaka, Kyushu
* Extension of AMR framework for realizing large-scale LBM simulations	Takashi Shimokawabe (The University of Tokyo)	NA	UTokyo, Tokyo Tech
* Deep neural network optimization based on dual inheritance theory and its application	Takahiro Shinozaki (Tokyo Institute of Technology)	DA	Tokyo Tech, Kyoto
* Construction of a platform for data science of high Reynolds number turbulence	Takashi Ishihara (Okayama University)	NA	Nagoya, Kyushu
Inference of fluid variables using machine-learning technique and mathematical background	Yoshitaka Saiki (Hitotsubashi University)	NA DA	UTokyo, Kyoto
State following of amorphous soft condensed matters: developments of high-performance computational schemes	Hajime Yoshino (Osaka University)	NA	Osaka
* Development of numerical methods for elastic wave propagation in heterogeneous and anisotropic materials and their application to nondestructive inspection	Takahiro Saitoh (Gunma University)	NA	Kyoto
* Precise analysis of earthquake source mechanisms in the South-Western Island area based on large-scale parallel seismic-wave simulations	Hiroshi Takenaka (Okayama University)	NA	Tokyo Tech, Nagoya
Integrated optimal design for virtual aerodynamic shape with geometric deformation and distributed plasma actuators	Takashi Matsuno (Tottori University)	NA	Hokkaido, Nagoya
Development of AI system to predict the 3D face morphology after orthodontic treatment	Cihiro Tanikawa (Osaka University)	NA	Osaka
Visualization and Statistical Modeling of Financial Big Data	Masayuki Jimichi (Kwansei Gakuin University)	NW	UTokyo
Developing High-speed Traffic Capture and Generator	Ryo Nakamura (The University of Tokyo)	NW	UTokyo