

# Joint Usage/Research Center for Interdisciplinary Large-Scale Information Infrastructures

## 2015-2016 Joint Research Projects

2015-2016 Joint Research Projects 35 Projects (73 joint research centers)  
 ※Exploratory Joint Research Projects are adopted as well.

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

Project Title	Leader (Affiliation)	Category	Joint Research Center
*Practical study of JHPCN-DF (Jointed Hierarchical Precision Compression Number – Data Format) for efficient VR visualization of large data system	Katsumi Hagita (National Defense Academy of JAPAN)	NA	Hokkaido, Tohoku, UTokyo, Tokyo Tech, Nagoya, Kyoto, Osaka, Kyushu
*Explosion of new direction of Parallel-in-Time and applications	Katsumi Hagita (National Defense Academy of JAPAN)	NA	UTokyo, Nagoya, Kyushu
*Massively-parallelized particle simulation of space plasma phenomena	Yohei Miyake (Kobe University)	NA	Hokkaido, Kyoto
*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
*Software Infrastructure for High Performance Electromagnetic Field Simulation Based on Co-design Approach	Takeshi Iwashita (Hokkaido University)	NA	Hokkaido, Kyoto
*Study on Optimization of MHD and FDTD Codes to Vector-type and Xeon Phi computer systems	Keiichiro Fukazawa (Kyoto University)	IS	Hokkaido, Tohoku, UTokyo, Kyoto, Kyushu
*Large-scale simulations of solar magnetic activities	Takaaki Yokoyama (The University of Tokyo)	NA	UTokyo
*Interaction between turbulent mixing and a large ensemble of tiny particles with internal degrees of freedom	Toshiyuki Gotoh (Nagoya Institute of Technology)	NA	Nagoya
*Large-scale dendrite growth simulations using phase-field and molecular dynamics methods	Tomohiro Takaki (Kyoto Institute of Technology)	NA	Tokyo Tech
*Optimization of the general-purpose parallelized MD software MODYLAS for many-core architectures	Yoshimichi Andoh (Nagoya University)	NA	UTokyo, Nagoya
*Large-scale multi-phase-field simulation of polycrystalline grain growth in a system containing mobile dispersed particles	Akinori Yamanaka (Tokyo University of Agriculture and Technology)	NA	Tokyo Tech
*Computational Science of Complex Multi-Scale Turbulent Flow Phenomena	Takashi Ishihara (Nagoya University)	NA	Nagoya
*Development and Application of Risk Assessment Simulation Techniques on Heat Stroke	Akimasa Hirata (Nagoya Institute of Technology)	NA	Tohoku
*Development of science big-data sharing mechanism for computing resource federation	Satoshi Matsuoka (Tokyo Institute of Technology)	DA, NW, IS	Hokkaido, UTokyo, Tokyo Tech, Kyushu
*Acceleration of 3D Electromagnetic Field Analysis with a Numerical Framework based on Hierarchical Domain Decomposition	Shin-ichiro Sugimoto (Tokyo University of Science, Suwa)	NA	UTokyo, Nagoya
*Development of a Fast Multipole Method Library for Various Architectures and its Evaluation Using Molecular and Fluid Dynamics Simulations	Tetsu Narumi (The University of Electro-Communications)	NA	Tohoku, Tokyo Tech, Nagoya, Kyoto
*Understanding of turbulence generating and sustaining mechanism based on vortex dynamics	Seiichiro Izawa (Tohoku University)	NA	Tohoku
*Data Transfer Examinations for Big-data Post-Processing via Cloud Technologies	Ken T. Murata (National Institute of Information and Communications Technology)	IS	Nagoya, Kyoto, Osaka, Kyushu
*Developments of Next Generation Accretion Disk Simulator	Ryoji Matsumoto (Chiba University)	NA	UTokyo
*Study on Large-Scale CFD Method Toward Environmental-Friendly and Safe Aircraft Design	Daisuke Sasaki (Kanazawa Institute of Technology)	NA, IS	Tohoku, Nagoya, Kyushu
*The 2.5-D simulation of seismic wave propagation with Greenland ice sheet models	Genti Toyokuni (Tohoku University)	NA	Tohoku
*An Evaluation of Coupled Application with User-Level Framework for Jointing Computation Center	Hideyuki Jitsumoto (Tokyo Institute of Technology)	NA, IS	Hokkaido, UTokyo, Tokyo Tech, Kyushu
*Architecture Aware Communication Avoiding Techniques for Extreme Large Simulations	Toshio Endo (Tokyo Institute of Technology)	NA	Hokkaido, Tohoku, UTokyo, Tokyo Tech

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*Development of High-productivity Framework for Large-scale GPU/CPU Computing and the Framework-based Simulation Code for the Air Flow in an Urban City	Takashi Shimokawabe (Tokyo Institute of Technology)	NA	Tokyo Tech
*Large-scale Particle Simulations using Dynamic Load Balance on a GPU Supercomputer    -- Application to Fluid-Structure Interaction	Takayuki Aoki (Tokyo Institute of Technology)	NA	Tokyo Tech
*Simulations of Ocean and Atmosphere in the Pan-Okhotsk region	Tomohiro Nakamura (Hokkaido University)	NA	Hokkaido
*An empirical study on remote distribution system for high-resolution visualization images towards efficient use of large-scale computational results	Hirotake Abe (University of Tsukuba)	IS	Tohoku, Osaka
Optimization of the tile algorithm for a matrix decomposition on highly parallel environments	Tomohiro Suzuki (University of Yamanashi)	NA	UTokyo
Quantum Transport Simulator for the Next Generation Transistors	Nobuya Mori (Osaka University)	NA	Osaka
Large-scale parallel simulation of seismic and tsunami waves for the study of mega-thrust earthquakes in subduction zones	Hiroshi Takenaka (Okayama University)	NA	UTokyo, Tokyo Tech
Development of fast solvation free energy calculation program based on the integral equation theory for molecular liquids to investigate large biomolecular systems	Yutaka Maruyama (RIKEN)	NA	Tohoku, Tokyo Tech
Empirical analysis of socio-economic data	Takaaki Ohnishi (The University of Tokyo)	DA	UTokyo
Numerical modeling of fracture process in infrastructure and large scale simulation for nondestructive testing	Kazuyuki Nakahata (Ehime University)	NA	Kyoto
Computational mechanics for disaster prevention taking account of fluid-solid interactions	Satoru Ushijima (Kyoto University)	NA	Kyoto
Research and Development towards Lightweight Virtual Machine Environments for Next-generation Super Computers	Takahiro Shinagawa (The University of Tokyo)	IS	UTokyo