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Energy and Water Development Appropriations for Fiscal Year 2001U.S. Department of Energy Performance and Accountability Report: Fiscal Year 2000Energy and Water Development Appropriations for 2001: Department of Energy fiscal year 2001 budget justificationsDepartment of Energy fiscal year 2000 budget justificationsEnergy and Water Development Appropriations for Fiscal Year 2008 : Hearings Before a Subcommittee of the Committee on Appropriations, United States Senate, One Hundred Tenth Congress, First Session, on H.R. 2641/S. 1751, an Act Making Appropriations for Energy and Water Development for the Fiscal Year Ending September 30, 2008, and for Other PurposesU.S. Department of Energy Performance and Accountability Report: Fiscal Year 2004Berkeley Lab Research ReviewEnergy and Water, and Related Agencies Appropriations for Fiscal Year 2007Energy and Water, and Related Agencies Appropriations for Fiscal Year 2006Priorities in the Department of Energy Budget for Fiscal Year 2006Energy and Water Development Appropriations for 2004: Department of Energy fiscal year 2004 budget justificationsEnergy and Water Development Appropriations for 2000: Department of Energy fiscal year 2000 budget justificationsComputer Simulation, Rhetoric, and the Scientific ImaginationUse of High Performance Computing in MeteorologyEnergy and Water Development Appropriations for 2006Handbook On Big Data And Machine Learning In The Physical Sciences (In 2 Volumes)Contemporary High Performance ComputingEnergy and Water Development Appropriations for 2006: Secretary of Energy, Science, renewable energy, and nuclear energyUse of High Performance Computing in MeteorologyEnergy and Water, and Related Agencies Appropriations for Fiscal Year 2007: Dept. of Defense-Civil, Dept. of Energy, Dept. of the Interior, nondepartmental witnessesNERSC 1998 Annual ReportEnergy and Water Development Appropriations for Fiscal Year 2003Energy and Water Development Appropriations for 2015: 2015 Congressional budget justification: Federal Energy Regulatory Commission; Defense Nuclear Facilities Safety Board; U.S. Nuclear Regulatory Commission; Appalachian Regional Commission; Delta Regional Authority; Denali CommissionNational Energy Research Scientific Computing Center (NERSC)U.S. Department of Energy Performance and Accountability Report: Fiscal Year 2003107-2 Senate Hearings: Energy and Water Development Appropriations, For Fiscal Year 2003, S. Hrg. 107-901, March 8, 2002, *107-1 Hearings: Energy and Water Development Appropriations for 2002, Part 4, 2001Fiscal Year 2001 Budget Authorization RequestEnergy and Water Development Appropriations for Fiscal Year Exascale Scientific ApplicationsEnergy and Water Development Appropriations for 2013: Dept. of Energy FY 2013 justificationsThe Department of Energy Fiscal Year 2008 Research and Development Budget ProposalEnergy and Water Development Appropriations for 2014: Department of Energy fiscal year 2014 justificationsParallel Computing: Accelerating Computational Science and Engineering (CSE)Energy and Water, and Related Agencies Appropriations for Fiscal Year Energy and Water Development Appropriations for 2010: Dept. of Energy fiscal year 2010 justificationsProviding the Tools for Scientific Discovery and Basic Energy ResearchAmerica's Next Generation SupercomputerU.S. Department of Energy Performance and Accountability Report: Fiscal Year 2005U.S. Department of Energy Performance and Accountability Report: Fiscal Year 2002

Parallel computing has been the enabling technology of high-end machines for many years. Now, it has finally become the ubiquitous key to the efficient use of any kind of multi-processor computer architecture, from smart phones, tablets, embedded systems and cloud computing up to exascale computers. x000D_This book presents the proceedings of ParCo2013 – the latest edition of the biennial International Conference on Parallel Computing – held from 10 to 13 September 2013, in Garching, Germany. The conference focused on several key parallel computing areas. Themes included parallel programming models for multi- and manycore CPUs, GPUs, FPGAs and heterogeneous platforms, the performance engineering processes that must be adapted to efficiently use these new and innovative platforms, novel numerical algorithms and approaches to large-scale simulations of problems in science and engineering.x000D_The conference programme also included twelve mini-symposia (including an industry session and a special PhD Symposium), which comprehensively represented and intensified the discussion of current hot topics in high performance and parallel computing. These special sessions covered large-scale supercomputing, novel challenges arising from parallel architectures (multi-/manycore, heterogeneous platforms, FPGAs), multi-level algorithms as well as multi-scale, multi-physics and multi-dimensional problems.x000D_It is clear that parallel computing – including the processing of large data sets (“ Big Data ”) – will remain a persistent driver of research in all fields of innovative computing, which makes this book relevant to all those with an interest in this field.

Adult or postnatal stem cells offer life-long cell replacement in tissues and organs, and are thus unavoidable targets of long-term and transient regenerative/epigenetic gene therapy for both inherited and acquired diseases; and effective anticancer therapy. In particular, autologous stem cells have been instrumental to the success of gene therapy, enabling breakthrough endonuclease-boosted gene targeting for gene correction (inherited diseases) or targeted integration of therapeutic transgenes (other disorders).This timely book highlights the pioneering translation of adult pluripotent stem cells as a substitute for tissue-specific stem cells, thereby pinpointing the invaluable potential for stem cell gene therapy applications of autologous cells to contribute to all three germ players. Pathologies are discussed in terms of stem cell repopulation dynamics, with appropriate niches (long-term engraftment) and tissues (cell turnover). Focus is also placed on the increasing number of identified tissue-specific cancer stem cells as the ultimate targets for recurrence-free cancer recovery, and on the development of armed stem cells as tumor-homing vectors for targeted anticancer stem cell gene therapy.

This 1998 annual report from the National Scientific Energy Research Computing Center (NERSC) presents the year in review of the following categories: Computational Science; Computer Science and Applied Mathematics; and Systems and Services. Also presented are science highlights in the following categories: Basic Energy Sciences; Biological and Environmental Research; Fusion Energy Sciences; High Energy and Nuclear Physics; and Advanced Scientific Computing Research and Other Projects.

Contemporary High Performance Computing: From Petascale toward Exascale, Volume 3 focuses on the ecosystems surrounding the world ' s leading centers for high performance computing (HPC). It covers many of the important factors involved in each ecosystem: computer architectures, software, applications, facilities, and sponsors. This third volume will be a continuation of the two previous volumes, and will include other HPC ecosystems using the same chapter outline: description of a flagship system, major application workloads, facilities, and sponsors. Features: Describes many prominent, international systems in HPC from 2015 through 2017 including each system ' s hardware and software architecture Covers facilities for each system including power and cooling Presents application workloads for each site Discusses historic and projected trends in technology and applications Includes contributions from leading experts Designed for researchers and students in high performance computing, computational science, and related areas, this book provides a valuable guide to the state-of-the art research, trends, and resources in the world of HPC.

This compendium provides a comprehensive collection of the emergent applications of big data, machine learning, and artificial intelligence technologies to present day physical sciences ranging from materials theory and imaging to predictive synthesis and automated research. This area of research is among the most rapidly developing in the last several years in areas spanning materials science, chemistry, and condensed matter physics.Written by world renowned researchers, the compilation of two authoritative volumes provides a distinct summary of the modern advances in instrument — driven data generation and analytics, establishing the links between the big data and predictive theories, and outlining the emerging field of data and physics-driven predictive and autonomous systems.

The book investigates the rhetorical nature of scientific computer simulations, and it discusses the implications of those rhetorical strategies for how we understand, use and evaluate simulated evidence in the real world.

National Energy Research Scientific Computing Center (NERSC) provides researchers with high-performance computing tools to tackle science's biggest and most challenging problems. Founded in 1974 by DOE/ER, the Controlled Thermonuclear Research Computer Center was the first unclassified supercomputer center and was the model for those that followed. Over the years the center's name was changed to the National Magnetic Fusion Energy Computer Center and then to NERSC; it was relocated to LBNL. NERSC, one of the largest unclassified scientific computing resources in the world, is the principal provider of general-purpose computing services to DOE/ER programs: Magnetic Fusion Energy, High Energy and Nuclear Physics, Basic Energy Sciences, Health and Environmental Research, and the Office of Computational and Technology Research. NERSC users are a diverse community located throughout US and in several foreign countries. This brochure describes: the NERSC advantage, its computational resources and services, future technologies, scientific resources, and computational science of scale (interdisciplinary research over a decade or longer; examples: combustion in engines, waste management chemistry, global climate change modeling).

From the Foreword: "The authors of the chapters in this book are the pioneers who will explore the exascale frontier. The path forward will not be easy These authors, along with their colleagues who will produce these powerful computer systems will, with dedication and determination, overcome the scalability problem, discover the new algorithms needed to achieve exascale performance for the broad range of applications that they represent, and create the new tools needed to support the development of scalable and portable science and engineering applications. Although the focus is on exascale computers, the

benefits will permeate all of science and engineering because the technologies developed for the exascale computers of tomorrow will also power the petascale servers and terascale workstations of tomorrow. These affordable computing capabilities will empower scientists and engineers everywhere." — Thom H. Dunning, Jr., Pacific Northwest National Laboratory and University of Washington, Seattle, Washington, USA "This comprehensive summary of applications targeting Exascale at the three DoE labs is a must read." — Rio Yokota, Tokyo Institute of Technology, Tokyo, Japan "Numerical simulation is now a need in many fields of science, technology, and industry. The complexity of the simulated systems coupled with the massive use of data makes HPC essential to move towards predictive simulations. Advances in computer architecture have so far permitted scientific advances, but at the cost of continually adapting algorithms and applications. The next technological breakthroughs force us to rethink the applications by taking energy consumption into account. These profound modifications require not only anticipation and sharing but also a paradigm shift in application design to ensure the sustainability of developments by guaranteeing a certain independence of the applications to the profound modifications of the architectures: it is the passage from optimal performance to the portability of performance. It is the challenge of this book to demonstrate by example the approach that one can adopt for the development of applications offering performance portability in spite of the profound changes of the computing architectures." — Christophe Calvin, CEA, Fundamental Research Division, Saclay, France "Three editors, one from each of the High Performance Computer Centers at Lawrence Berkeley, Argonne, and Oak Ridge National Laboratories, have compiled a very useful set of chapters aimed at describing software developments for the next generation exa-scale computers. Such a book is needed for scientists and engineers to see where the field is going and how they will be able to exploit such architectures for their own work. The book will also benefit students as it provides insights into how to develop software for such computer architectures. Overall, this book fills an important need in showing how to design and implement algorithms for exa-scale architectures which are heterogeneous and have unique memory systems. The book discusses issues with developing user codes for these architectures and how to address these issues including actual coding examples. ’ — Dr. David A. Dixon, Robert Ramsay Chair, The University of Alabama, Tuscaloosa, Alabama, USA