

Science & Big Physics Summit

Control, Diagnostics and Measurement for Physics Systems and Experiments

August 7 - 8, 2012

Austin Convention Center

AUGUST 7, TUESDAY REGISTRATION 7:30 – 8:30 AM

8:30 AM NIWEEK KEYNOTE
Dr. James Truchard, President, CEO and Cofounder, National Instruments
Eric Starkloff, VP of Product Marketing for Test and Industrial Embedded

10:00 AM BREAK

10:30 AM Welcome and Introduction to Graphical System Design
Ballroom E Dr. Stefano Concezzi, Director, Science & Big Physics, National Instruments

SUMMIT KEYNOTE
The Path to Exploring the Cosmos and Laser Fusion Energy
Dr. Ed Moses, Director, National Ignition Facility and Photon Science
Principal Directorate, Lawrence Livermore National Laboratory

11:30 AM LUNCH

1:00 PM Deployment of COTS Hardware and Software in the C2 FRC Plasma
Confinement Experiment
Andy Sibley, Tri Alpha Energy, USA; Chris White, ThinkG Consulting, USA

1:30 PM GPU-based Numeric Simulations for Spintronics
Jan Jacob, University of Hamburg, Germany

2:00 PM BREAK

2:15 PM Operating and Controlling more than 100 Cherenkov Telescopes
Peter Wegner, Group Leader, DESY, Germany

2:45 PM System Components Employing Design Patterns on the Discovery Channel
Telescope
Paul Lotz, Lowell Observatory, USA

3:15 PM BREAK

3:30 PM Pure LabVIEW Implementation of EPICS Communication Protocol
Alexander Zhukov, Spallation Neutron Source, ORNL, USA

4:00 PM Radiation and Magnetic Testing to Ensure Reliable Operation and Mitigation of
NI Platforms
Ravi Marawar, Science & Big Physics Segment, National Instruments

4:30 PM BREAK

4:45 PM EXPERTS PANEL DISCUSSION - Quest for Alternative Energy: Anomalous
Heat Effect (a.k.a Cold Fusion) [See Page 4 for Abstract]

AUGUST 8, WEDNESDAY

8:30 AM NIWEEK KEYNOTE
Shelley Gretlein, Director of Software Marketing, National Instruments
Jeff Kodosky, Cofounder and Business Technology Fellow, National Instruments

10:00 AM BREAK

10:30 AM SUMMIT KEYNOTE
Ballroom E The Amazing Neutron: Frontiers in Science and Engineering Revealed by Pulsed Neutrons
Dr. Kevin Jones, Director, Research Accelerator Division, Oak Ridge National Laboratory, USA

11:00 AM COTS-based Control, Monitoring and Diagnostics for the Phoenix High-Energy Laser System
Derek Schaeffer, Dept. of Physics & Astronomy, University of California at Los Angeles, USA

11:30 AM LUNCH

1:00 PM High Fidelity Accelerator Simulation
Eric James, Integrated Science & Accelerator Technology Hall, Indiana University, USA

1:30 PM Integrated Signal Programmer for Timing and Firing sites
Taren Bowen, National Security Technologies, USA

2:00 PM BREAK

2:15 PM Enabling Quantum Computing Revolution for High Performance Computing Needs using PXI
Andrew Hammond, MagiQ Technologies, USA

2:45 PM Hyperion: Commercialization of LENR
John Hadjichristos, Defkaltion Green Technologies, Greece

3:15 PM BREAK

3:30 PM Status of CMNS/CF/LENR Research at Kobe-Technova
Akito Takahashi & Akira Kitamura, Senior Advisor, Technova Inc.

4:00 PM Commercialization of LENR/CECR Technology
Robert Godes, Brillouin Energy Corp., USA

4:30 PM BREAK

4:45 PM POSTER SESSION [See Page 3 for Poster Titles]

6:00 PM ADJOURN

POSTER SESSION

Development of an Object Oriented Software Framework in LabVIEW at the Spallation Neutron Source
Cary Long, Oak Ridge National Laboratory, USA

Quench Protection System for High Temperature Superconducting coils using NI-FPGA
Piyush Joshi, Brookhaven National Laboratory, USA

Wire Scanner System Using FPGA-based COTS Systems at LANL
Thierry Debelle, National Instruments, USA

Femto-Second Timing and Synchronization Architectures
Andrew Hammond, MagiQ Technologies, USA

Fiber Optic Sensing for Reliable Strain and Temperature Measurements in Big Physics Systems
David Potter, National Instruments, USA

FPGA-Based Scanning Probe Microscope Measurement and Control
Andrew J. Berger, Department of Physics, Ohio State University, USA

NI Global Services for Big Physics Applications
Barry Hutt, National Instruments, USA

Designing Low Noise Front Ends – Bridging Gap to a Solution
Jim Pogge, Tennessee Tech University, USA

Flexible COTS Platforms for Bringing Particle Accelerators to Market
Casey Lamers, Phoenix Nuclear Labs, USA

Example of system integration for TAE C2 experiment – gas introduction system using cRIOs
Simone Primavera, Tri Alpha Energy, USA

Evaluation of a Variety of Photon Beam Position Monitor Data Acquisition Methodologies at the APS
Bob Lill, Argonne National Laboratory, USA

Pulsed Power, Fiber Optic Isolation and Long Pulse Integrator Solutions utilizing NI General Purpose Hardware for Big Physics Applications
Tim Ziemba, Eagle Harbor Technologies, USA

Evaluation and Implementation of High Performance Real-time Signal Processing for Rayleigh Scattering Based Quench Detection for High Field Superconducting Magnets
Gene Flanagan, Muons Inc, USA

Remote Handling Using NI PXI Platforms
Ignazio Piacentini, ImagingLab S.r.l., Italy

COTS Real Time Quench Detection System for Superconducting Magnets
Juan Lizarazo, Verivolt LLC

Beam Line Automation Using EPICS Enabled PXI System at LNLS Brazil
Bruno Cesar, National Instruments, Brazil

EPICS Interface Options for NI Hardware Platforms
Chad Evans, National Instruments, USA

EXPERTS PANEL DISCUSSION

Quest for Alternative Energy: Anomalous Heat Effect

Several labs around the world are trying to replicate the phenomenon that has been referred to as “Cold Fusion”. While there is controversy associated with the term “cold fusion” there have been over 200 observations of intense heat release at many national laboratories and research facilities around the world. This demonstrates that either there is an unknown physical event or there is a need for better measurement and control tools. In both cases NI can provide the tools to accelerate innovation and scientific discovery.

The Science & Big Physics summit will bring together experts in this area to discuss these anomalous heat effects. The panelists will discuss the current status of theoretical research, experimental results and the prospective of commercializing such a technology for day-to-day energy needs.

PANELISTS:

- Dr. Andrea Aparo, Senior Advisor R&D, Ansaldo Energia Spa
- Dr. Akito Takahashi, Professor Emeritus, Osaka University, Senior Advisor, Technova Inc., Japan
- Dr. Michael McKubre, Energy Research Center, SRI International, USA
- Dr. Robert Duncan, Vice-Chancellor for Research, University of Missouri, USA
- Mr. Robert E. Godes, President and Chief Technology Officer, Brillouin Energy Corp., USA

INDUSTRIAL EXHIBITION: Science & Big Physics Pavilion

Visit the Science & Big Physics pavilion to learn how NI platforms are being used to enable scientists and engineers to do research in fundamental physics, attain energy from fusion and help cure cancer through particle therapy among other things.

Measurement, Diagnostics and Control To Solve World’s Toughest Challenges

- See how CERN uses a high reliability and availability chassis in their quest for Higgs-Boson particle
- Learn how Los Alamos National Laboratory and Oak Ridge National Laboratory are using EPICS with NI platforms for neutron science
- Control a ring that simulates the plasma within a fusion reactor in the quest for energy from fusion
- Watch a simulation how a robotic arm can help with remote handling and maintenance of a fusion reactor
- See how precision timing and synchronization helps with the operation of the Nevada National Security Site

Exhibitors

- BiRa Systems Inc.
- Eagle Harbor Technologies
- MagiQ Technologies
- National Security Technologies
- Verivolt LLC