



**Pacific Northwest**  
NATIONAL LABORATORY

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Researchers from the Pacific Northwest National Laboratory are members of the Belle experiment, an international collaboration that recorded data at the KEKB accelerator in Tsukuba, Japan from 1999-2010. This image shows a portion of the electron (outer) and positron (inner) rings of the accelerator in the KEKB tunnel.

The primary motivation for the Belle experiment was verification of the Cabibbo-Kobayashi-Maskawa description of quark mixing and charge-parity violation. This achievement was recognized in the Nobel committee's citation for the 2008 Nobel Prize in Physics.

Research in heavy quark physics is an essential component of the future US program in particle physics. PNNL is a leading member of a consortium of US Universities engaged in the upgrade to the particle identification detector systems for the Belle II Experiment and beam diagnostic detector systems for the SuperKEKB accelerator. First collisions at SuperKEKB are anticipated in 2014.

## *Director's Distinguished Lecture Series*

# **Dr. Atsuto Suzuki**

*Director General, KEK – The High Energy Accelerator Research Organization, Japan*

**June 3, 2011 | 3:30pm | Battelle Auditorium**

### **Globalization and Technological Innovation in Future Accelerators**

"We humans have long been obsessed with four great questions: the nature of matter, the origin of the universe, the nature of life and the workings of mind" which was pointed out by Herbert A. Simon, Nobel Laureate in Economics. Accelerators have been – and will be – a powerful tool to challenge for answers to the above questions, except for the workings of mind. In order to open up a new horizon of these sciences, it is essential to innovate key accelerator technologies. Among other things, much higher energy and much larger luminosity are indispensable in the High Energy Physics field.

The trend of high energy accelerators brings emergent difficulties which come from steadily increasing project size, with corresponding increases in project cost and time-span. To overcome these difficulties, it is essential to have strong support from the public, which is accomplished through feeding technological breakthroughs back into the society. We have to seriously take this into account for advancing accelerator sciences.

In this presentation the above topics are overviewed, showing current research activities – particularly in Japan.

