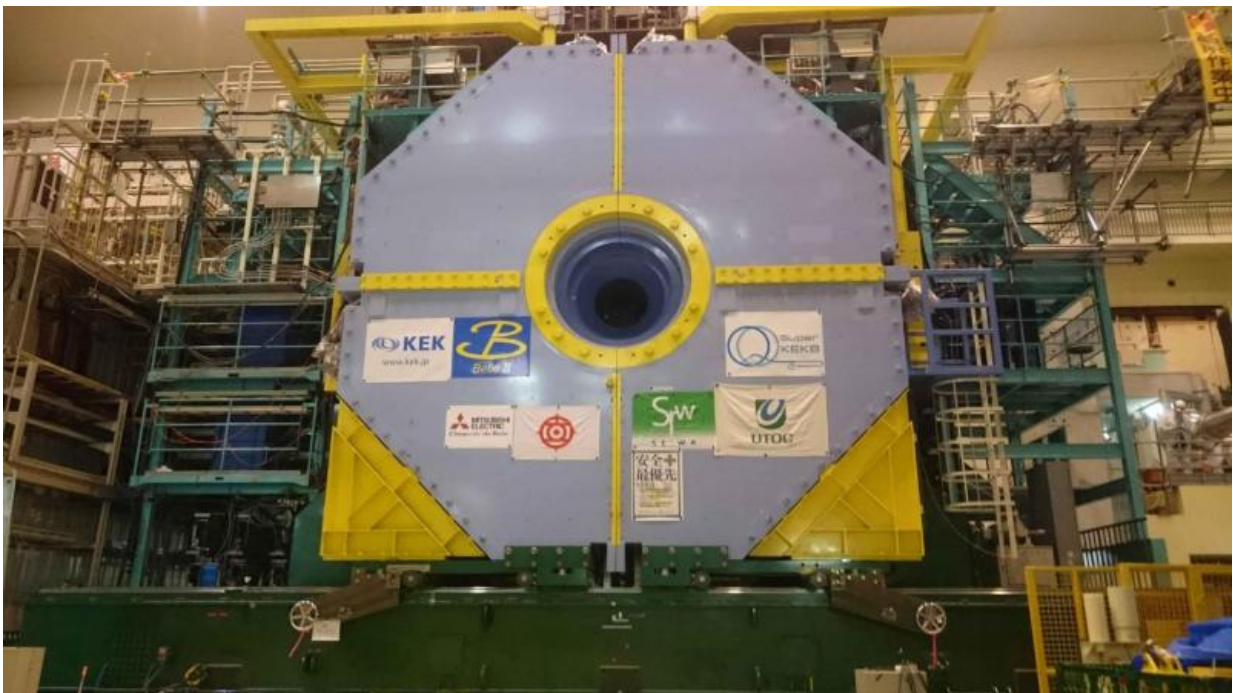


Physicists bring together detector and accelerator to explore 'new physics' beyond the Standard Model

April 20 2017



The Belle II detector stands 26-feet high and wide. Credit: Courtesy of Belle II Collaboration

To study some of the tiniest particles in the universe, an international band of over 750 physicists from 23 countries is building a massive instrument. The instrument will smash subatomic particles together and

analyze the debris to look for signs of as-yet-unseen particles predicted to be fundamental to the workings of the universe.

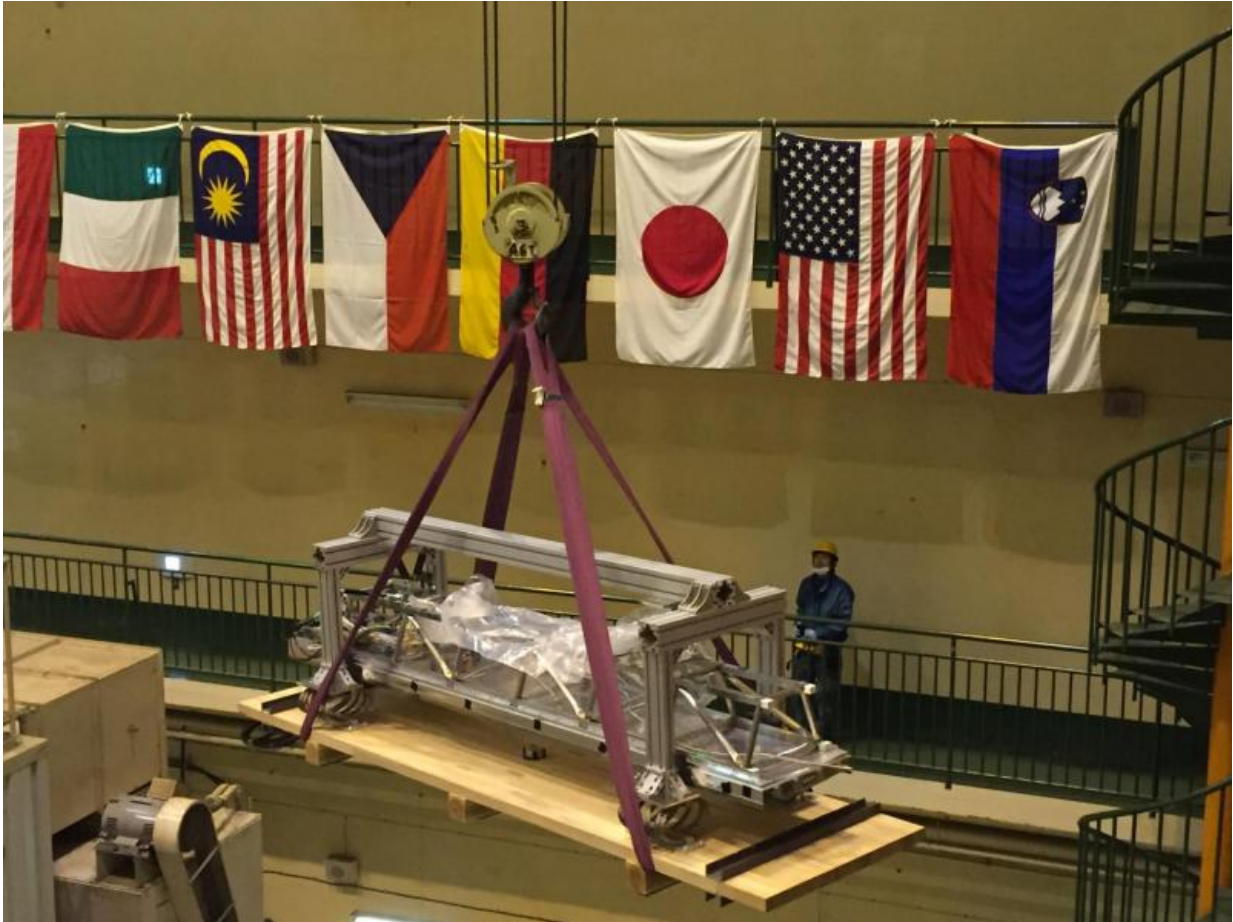
Last week at the KEK laboratory in Tsukuba, Japan, researchers [put together](#) two key components of the instrument by nestling a 1,400-ton detector called Belle II into the 3-kilometer-long ring of the SuperKEKB accelerator.

When the instrument becomes fully functioning next spring, SuperKEKB will send electrons smashing into their antimatter cousins called positrons, right in the middle of the 26-foot Belle II detector. Belle II will track the direction, momentum, and energy of the resulting [particles](#) to help scientists understand some of the mysteries of the Standard Model of physics, such as why matter outlived antimatter in the earliest moments of our universe.

The detector will also help researchers search for new particles and behaviors that might indicate new physics currently only predicted by theory.



Moving the 1,400 pound detector into place and hooking it up to the accelerator took many hands. Credit: Courtesy of Belle II Collaboration



The centerpiece of the U.S. contribution, known as iTOP, flies past flags from a handful of participating countries. Credit: Courtesy of Belle II Collaboration

Provided by Pacific Northwest National Laboratory

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