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Status and schedule of SuperKEKB

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SuperKEKB, which is an upgrade of KEKB B-factory (KEKB), is a next-generation high luminosity electron-positron collider with asymmetric energies of 7 GeV (e-) and 4 GeV (e+).
Its predecessor, KEKB, was operated from 1998 to 2010 and had been a leader in the race to provide the world' s highest luminosity since 2001. It delivered a total integrated luminosity more than 1 /ab to Belle detector and made a great contribution to confirm CP violation in the neutral B meson system. To pursue research on flavor physics, however, much more luminosity is required and the SuperKEKB project started last year. At the SuperKEKB project, a 50-fold increase in integrated luminosity is expected just ten-plus years after inauguration. The design luminosity is 8.0E35 /cm2/s, which is about 40 times higher than the KEKB's record. To achieve this challenging goal, "nano-beam scheme"and "doubling the beam currents"are adopted. In the nano-beam scheme, the bunches of both beams are extremely squeezed to nano-meter scale (0.3 mm across and 100 nm high) and intersected only at the highly focused region of each bunch at a large crossing angle (4.8 degree). To that end, the design of the interaction region is changed drastically and new superconducting magnets for final focusing are installed deeper in the interaction region. To have low emittance beams, which are essential to realize nano-size beams, construction of a damping ring for positrons, replacement of magnets (mainly in the positron ring) and precise alignment of the magnets are also required. These should produce 20 times more luminosity than KEKB.
Meanwhile, the luminosity is also pushed up twice by increasing the beam current 2.6 A (e-) and 3.6 A (e+), which are twice as much as KEKB. To achieve this, the beam pipes of the positron ring are replaced to new one with antechambers, which can deal with the unfortunate side effects of high beam current in the positron ring (electron-cloud effect), as well as excessive heating in the beam pipe due to the strong radiation. Additionally, there are other modifications, such as upgrades of a positron source and RF systems.
Dismantle of KEKB and construction of SuperKEKB started on July 2010. They are now underway and commissioning will start in the second half of Japanese FY2014. The status and an updated schedule of SuperKEKB will be reported at the conference.

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