Stanford Synchrotron Radiation Lightsource 2010 - 2011 run starts this week

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SSRL's SPEAR3 storage ring. (Photo by Brad Plummer.)

The 2010–2011 user run starts this week at the Stanford Synchrotron Radiation Lightsource. The run is scheduled to last until July 25, 2011, with an estimated 1500 users coming to SLAC over the course of the run to perform research using SSRL's X-ray beamlines. The synchrotron will begin the run at an operating current of 350 milliamperes, up from 200 mA during the 2009–2010 run. The team plans to ramp up to the SPEAR3 top design current of 500 mA sometime during the run.

The higher operating current is possible in part thanks to upgrades made to the SPEAR3 injector systems ("SPEAR3 Injector Beefed Up for Frequent Injection Regimen" below) during the annual three-month shutdown. The upgrades improved injector reliability and

reproducibility, which means the system is ready to handle the more frequent injections of electrons into the storage ring required to maintain a higher operating current.

In addition to projects that increased injector reliability, a major reorganization of the SPEAR accelerator and beamline computer networks is currently under way ("SPEAR3 Computer Network Reorganization Under Way" below), with much of the work now completed for the accelerator and migration of the beamlines to their new sub-networks to take place incrementally during the run.

Seismic upgrades round out the major projects either completed or pushed forward during the past shutdown.

SSRL is ready for the user run, inside and out.

SPEAR3 Injector Beefed Up for Frequent Injection Regimen

Work at the SPEAR3 storage ring during the annual downtime involved projects both large and small to support the continued use of frequent-injection mode. Frequent injection is necessary to support SPEAR3's goal of reaching its full design current of 500 milliamperes—and improved data collection for researchers using the Stanford Synchrotron Radiation Lightsource's bright X-rays. But frequent injection has challenges of its own.

SPEAR3 Computer Network Reorganization Under Way

A multi-year project to reorganize the computer network for the SPEAR3 accelerator and beamlines is bearing fruit, according to

Clemens Wermelskirchen, manager of the SPEAR3 control system and network, and his counterpart for the SPEAR3 beamlines, Martin George. The goal is to improve network performance and reliability—as vital to the performance of the accelerator and beamlines as mechanical upgrades and maintenance, Wermelskirchen said.

"The SPEAR3 control system can never go down," he stated. "If we lose a significant network component, we lose the accelerator." However, the previous organization of the network coupled with the growth of SSRL made the network increasingly difficult to support.

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