



Birdseye view of booster and storage rings of Canadian Light Source synchrotron
Photo: Canadian Light Source Inc., University of Saskatchewan

“It’s like having a synchrotron on your desktop”

CA*net 4 is poised to bring the light-producing marvels of Canada’s new third-generation synchrotron directly to the desktops of individual researchers.

Led by the University of Alberta, the project will use CA*net 4 lightpaths to access experimental facilities at the \$174-million Canadian Light Source (CLS) at the University of Saskatchewan. It’s the latest in a trend that is seeing large, expensive research facilities being shared across dedicated networks.

“For structural biologists, biochemists and geneticists, this will be a world first,” says Dr. Ernst Bergmann, General Manager of Alberta Synchrotron Institute at the University of Alberta. “By using end-to-end lightpaths to link their desktop computers to the CLS, we can achieve data rates of up to 10 gigabits. That’s 10 to 100 times better than today.”

The goal is to integrate software provided by industry partner BigBangwidth with User Controlled LightPath software so that researchers can use a dedicated lightpath to bypass the campus LAN, without worrying about bandwidth, latency, security or other network glitches.

The project will initially link structural biologists at the universities of Alberta and Calgary to the protein crystallography beamline at the CLS. It will later be expanded to some 55 crystallography research groups across Canada.

The big advantage for researchers will be the ability to collect data in real-time as experiments happen, instead of waiting days for DVDs to be shipped back to their labs. “This will save researchers a considerable amount of travel, money and time. Rather than scheduling one or two days on a beamline, researchers could work from their desktop in blocks of hours or even minutes. Experiments that currently take several months to complete could be cut to days or weeks.”

And that, adds Dr. Bergmann, will strengthen Canada’s position in the highly competitive life sciences industry.

“Protein crystallography and structural biology research provide a detailed atomic resolution structure of drug targets. That’s invaluable to industry.” ■

Participants: University of Alberta (Alberta Synchrotron Institute); University of Alberta (Depts. of Biochemistry, Chemistry and Medical Microbiology & Immunology); BigBangwidth; University of Calgary (Dept. of Biological Sciences); University of Saskatchewan (Dept. of Biochemistry); Canadian Light Source; NETERA Alliance; SRNet

Sector Focus: Structural biology

Advanced Applications

Project: End-to-End Lightpaths at Synchrotrons

Goal: To enable remote access to Canadian Light Source via CA*net 4 lightpaths.

Project Leader: Alberta Synchrotron Institute, University of Alberta

Participating Regions: Edmonton, Calgary, Saskatoon

Duration: December 2004 – March 2006

CANARIE Investment: \$150,000

The * Advantage

Accelerating research, faster experiments, reduced travel, and helping researchers share big science facilities.



Dr. Ernst Bergmann
Alberta Synchrotron Institute