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The SER-CAT Virtual Beamline: Lessons learned when over 95% of all data is collected remotely John P. Rose, John Chrzas, Jim Fait, John Gonczy, Zheng-Qing "Albert" Fu, Zhongmin Jin, Rod Salazar, Gerold Rosenbaum & Bi-Cheng Wang. Southeast Regional Collaborative Access Team and the Department of Biochemistry and Molecular Biology University of Georgia, Athens, GA 30602.

From its inception, SER-CAT has been working towards the goal of providing its users with "Light When YOU Need It!" via the concept of a "virtual home synchrotron" which could be integrated into their daily work much like the X-ray lab down the hall.

SER-CAT began exploring automation of its beamlines shortly after the signing of MOU with APS in March 1999. Working with Oceanering Space Systems a conceptual design for automated data collection robot (ASTRO) was developed in 2000. In 2003, using funds from the Georgia Research Alliance, automation of the SER-CAT beamlines began with the installation of a highly modified Berkeley/ALS automounter on SER-CAT's bending magnet beamline 22BM closely followed by a higher capacity version on its undulator beamline 22ID.

SER-CAT's web-based experimental control system *SERGUI* was also designed with remote access in mind. *SERGUI* follows the Bul-Ice tab format with each tab representing one of the key data collection steps. The web-based nature of the experimental control system means that remote users have full control of the beamline from their home lab including MAD/SAD data collection, beamline/goniometer optimization, wavelength selection, sample mounting, annealing, two-click or automated crystal screening, sample rastering, fluorescence scans and traditional, segmented or helical data collection.

Today over 95% of SER-CAT members routinely collect data remotely. The high number of remote users means that the system must be both robust and user tolerant. The presentation will focus on the system as a whole and the measures taken to ensure that remote users can routinely collect high-quality data in an efficient manner.

Work supported by the SER-CAT Member Institutions (see www.ser-cat.org), University of Georgia Research Foundation and the Georgia Research Alliance.

Please email abstract to Ms. Lily Li (lilyli@uga.edu)

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