

## Microsymposium

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#### *Remote Access Capabilities at the GM/CA Beamlines at the APS*

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The GM/CA facility consists of two undulator source beamlines and a bending magnet beamline at the Advanced Photon Source (APS). Access to the operation of these beamlines is accomplished through visits by investigators who are either on-site, remote or a combination of the two. In all modes of access, user operations are controlled by the experimenter. The control and capabilities of the GM/CA beamlines are identical for remote and on-site users. Remote access to the beamlines is through NX or Teamviewer to local computers [1]. Once communication has been established, experienced GM/CA experimenters are greeted by our familiar JBlulce, the graphical user interface/control program[2] responsible for all operations from sample handling through data collection and reduction. Although investigators always see a familiar interface, both software and hardware on the beamlines are continually improving. Recent hardware upgrades include a shift of the optical focusing mirrors on the ID-B beamline closer to the sample to provide a significant increase in flux, and installation of a new Pilatus3 6M detector on ID-D, the second undulator beamline. The JBlulce program has incorporated new detector controls for shutterless operation while continuing to expand the features of rastering, vector (helical) data collection, strategy tools and data analysis. These tools have been essential to investigators working on membrane crystal samples, e.g. GPCRs, as well as for samples that decay quickly or require data to be collected from multiple crystals. The presentation will provide an overview of beamline remote control as well as an update of the equipment that it operates at GM/CA.

[1] [www.gmca.anl.gov/remote](http://www.gmca.anl.gov/remote), [2] S. Stepanov, O. Makarov, M. Hilgart et al *Acta Cryst. D*, 2011, 67(3), 176-188

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