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## Initial study on vertical electron beam phase space at the Canadian Light Source

The success and the quality of biomedical imaging data taken at synchrotron facilities is not only dependent on the brightness and/or emittance but also beam stability. During some recent imaging experiments at the biomedical beamline at the Canadian Light Source, vertical beam motion created banding artifacts in the acquired images. These experiments used x-ray energies around the K-edge of an element as part of “K-Edge Subtraction”(KES) imaging of animals containing contrast element material, such as iodine or barium. This banding occurred in two different approaches to KES imaging. One with a bent Laue monochromator specifically designed for live animal imaging and another with a double crystal Bragg monochromator used for excised tissue imaging. Upon close inspection of the imaging beams it was noted that the vertical position of the beam was directly measured by the imaging system while the vertical angle of the beam altered the location of the K-edge energy in the beam. Thus these systems are capable of simultaneously measuring the vertical position and angle, or vertical phase space, of the photon beam from the synchrotron source. These measurements can be used to infer the electron beam phase space in the storage ring.

Results of the measurements, analysis and sensitivity to electron beam motion will be presented

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