A Long-ID Beamline for Non-Resonant Inelastic X-Ray Scattering at SPring-8

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The RIKEN Quantum NanoDynamics Beamline, BL43LXU [1], is now being commissioned at SPring-8. This will be a new facility for inelastic x-ray scattering with resolution from below 1 meV to ~100 meV designed to have unprecedented flux on the sample. The source is a set of 3 insertion devices operated in series with inter-segment electron-beam focusing allowing a total of 15 m of insertion device with, in principle, a minimum gap size of ~5.5 mm. This should give an available source intensity between about 2 and 4 x 10^{11}/photons/second/meV between 25 and 15 keV, respectively. The beamline will have two spectrometers, one for high resolution (<1-10 meV, 10x10 mrad^2 maximum analyzer aperture) with 42 analyzers, and one for medium resolution (~10-100 meV, 50x50 mrad^2 maximum analyzer aperture) with 9 analyzers. A key component of the beamline is a first grazing incidence mirror acting as low-pass filter to reduce the power from ~1.8 kW in the central cone to <500 W onto the Si(111) high-heat-load monochromator. The talk will discuss the status of the beamline, and show some first results. Notable recent progress at the beamline include the delivery of good high-resolution crystals after several years of R&D and installation of the full complement of IDs (March of 2013).